3.1.2.3 Individual Bird Species of Greatest Conservation Need Summaries

Horned Grebe (Podiceps auritus)

Species Assessment Scores*

State rarity:	NA
State threats:	2
State population trend:	3
Global abundance:	4
Global distribution:	3
Global threats:	4
Global population trend:	5
Mean Risk Score:	3.5**
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading
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the Landscape, but represents the probability that the
species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Impoundments/Reservoirs
Central Lake Michigan Coastal	Inland lakes
Central Lake Michigan Coastal	Lake Michigan
Central Sand Hills	Impoundments/Reservoirs
Central Sand Hills	Inland lakes
Central Sand Plains	Impoundments/Reservoirs
Forest Transition	Impoundments/Reservoirs
North Central Forest	Impoundments/Reservoirs
North Central Forest	Inland lakes
North Central Forest	Lake Superior
Northern Highland	Inland lakes
Northern Lake Michigan Coastal	Impoundments/Reservoirs
Northern Lake Michigan Coastal	Inland lakes
Northern Lake Michigan Coastal	Lake Michigan
Northwest Sands	Inland lakes
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southern Lake Michigan Coastal	Impoundments/Reservoirs
Southern Lake Michigan Coastal	Inland lakes
Southern Lake Michigan Coastal	Lake Michigan
Superior Coastal Plain	Impoundments/Reservoirs
Superior Coastal Plain	Inland lakes
Superior Coastal Plain	Lake Superior

^{**} Based on fewer than the standard 7 criteria.

Threats and Issues

- Horned Grebes are a migrant found on Lake Michigan and on larger inland lakes. They feed on crustaceans, fish, and arthropods and are going to benefit from healthy aquatic ecosystems. It is currently unclear what is limiting this species' population in Wisconsin.
- Loss of habitat on the breeding grounds in the northwest part of the state seems to be a serious concern.
- Exposure to lead and organohalogens on the breeding grounds and in migration/winter is a possible threat.
- Horned grebes are sensitive to pollution from agricultural chemicals in summer and in winter. More study is needed to determine if this is an issue during migration.

- Maintain high quality open water wetlands by mitigating impacts of invasive species and nutrient loading from runoff.
- Study is needed to determine what impact ecological changes on the Great Lakes may be having on the continental population.
- More research is necessary to determine what factors are limiting the population of this species in Wisconsin

Red-necked Grebe (Podiceps grisegena)

Species Assessment Scores*

State rarity:	5
State threats:	3
State population trend:	4
Global abundance:	4
Global distribution:	2
Global threats:	3
Global population trend:	2
Mean Risk Score:	3.3
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Emergent marsh
Central Sand Plains	Emergent marsh - wild rice
Central Sand Plains	Submergent marsh
Northwest Sands	Emergent marsh
Northwest Sands	Emergent marsh - wild rice
Northwest Sands	Submergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Emergent marsh - wild rice
Southeast Glacial Plains	Submergent marsh
Western Prairie	Emergent marsh
Western Prairie	Submergent marsh

- Red-necked Grebes nest in emergent marshes associated with large lake/wetland complexes. Habitat
 loss and degradation, and habitat isolation and fragmentation, due to drainage, filling, and lake shore
 development are the principal threats to this species.
- Artificially high water levels maintained by man-made dams pose a threat to this species' nesting habitat.
- Purple loosestrife may dominate native vegetation and form stands too dense for nesting Red-necked Grebes. Eurasian carp activity is another factor involved in the disappearance of suitable nesting habitat.
- The effects of chemical contamination (dioxin, PCBs) on reproduction is a major concern.
- Great Horned Owl predation has been identified as a mortality factor for Red-necked Grebes.

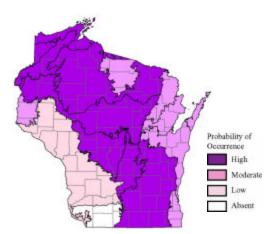
- Initiation of major lake or wetland ecosystem renovation projects where breeding habitat is declining is the most important management action.
- At managed state properties, it will be important to maintain long-term productivity of marshes by mimicking or allowing natural hydrologic regimes and adapting management techniques to localized conditions. Periodic drawdowns will benefit Red-necked Grebes.
- Control of carp and purple loosestrife is an ongoing concern. Removal of loosestrife by uprooting
 plants, water-level manipulation, biological control (weevils, etc.), mowing, burning, or herbicide
 applications is recommended.
- At some sites, removal of Great Horned Owls (or mink) known to kill chicks may be essential to maintain or preserve colony productivity.
- Use of artificial nesting platforms may benefit Red-necked Grebes and should be evaulated on a siteby-site basis.
- During the nesting season, water levels must remain stable. Water levels that encourage the stability of emergent patches must be a part of comprehensive management plans.
- Continued monitoring of extant colonies to examine contaminant levels and document long-term population trends is needed.
- At a broader level, efforts to raise awareness about grebe ecology in lake and wetland ecosystems are an ongoing intradepartmental and public concern.

American Bittern (Botaurus lentiginosus)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	5
Global abundance:	3
Global distribution:	2
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.3
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Emergent marsh
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Open bog
North Central Forest	Emergent marsh
North Central Forest	Northern sedge meadow
North Central Forest	Open bog
Northwest Lowlands	Northern sedge meadow
Northwest Lowlands	Open bog
Northwest Sands	Emergent marsh
Northwest Sands	Northern sedge meadow
Northwest Sands	Open bog
Southeast Glacial Plains	Emergent marsh
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Open bog

- American Bitterns are declining more quickly from southern Wisconsin for reasons that are not currently fully understood.
- American Bitterns prefer large wetlands and wetlands that have adjacent upland grass cover.
- Loss of wetlands through filling, dredging, altering water levels, etc. is a threat.
- Overgrazing or managing grasslands with mowing can prevent American Bittern nesting.
- It is not known how or if invasive species impact American Bitterns.
- Siltation, eutrophication, and chemical toxins (e.g., pesticides) in wetlands are all threats, particularly in agricultural areas.
- American Bitterns do best within wetland complexes rather than isolated wetlands.

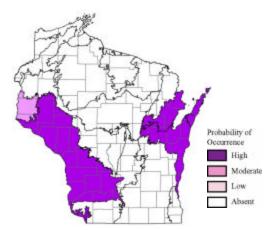
- Continue and strengthen wetland protection laws and provide adequate funding for wetland restoration work through the North American Wetland Conservation Act, Wetland Reserve Program, etc. to help protect and restore American Bittern habitat.
- Preserve wetland habitats, particularly large (greater than 10 ha), shallow wetlands with dense growth of robust emergent aquatics.
- Research and develop methods for more effective monitoring of American Bitterns and other secretive marshbirds.
- Evaluate wetland restorations to determine their effectiveness in conserving American Bittern and other non-game species.
- Research the effects of invasive exotic wetland plants on habitat quality.

Great Egret (*Ardea alba*)

Species Assessment Scores*

State rarity:	5
State threats:	2
State population trend:	5
Global abundance:	3
Global distribution:	1
Global threats:	2
Global population trend:	1
Mean Risk Score:	2.7
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Floodplain forest
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Submergent marsh
Central Lake Michigan Coastal	Warmwater rivers
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Floodplain forest
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Submergent marsh
Northern Lake Michigan Coastal	Warmwater rivers
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Submergent marsh
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Emergent marsh
Western Prairie	Warmwater rivers

- Degradation of wetland breeding habitat through loss of concentrations of large trees suitable for colonial nesting in floodplain forests and loss of habitat due to wetland drainage and river channelization (the latter causing loss of shallow backwaters) constitute significant threats.
- Reduction or elimination of food resources due to contaminants.
- Relatively high levels of PCBs, DDT, DDD, DDE and other contaminants have been reported in rookeries along the Upper Mississippi River. Contaminants may have caused colony declines along the Upper Mississippi River in the past.

- Human disturbance is most deleterious during incubation and when young are in the nest. Disturbed adults may fly from the nest leaving eggs or young exposed to the elements. Disturbance increases the chance that young will leave the nest prematurely, either falling to the ground or into another nest resulting in certain death. In some cases, habituation to predictable events (boaters) may occur, but at other times colony abandonment may occur.
- Stochastic events (e.g., tornadoes, heavy storms) can cause widespread nesting failures and may result in colony abandonment (e.g., Four Mile Island at Horicon Marsh).

- Work with the WDNR's Landowner Incentive Program to develop strategies for protection of extant colonies. Develop a list of protection options for use by landowners.
- Include identification, monitoring, and protection of colony sites into landscape planning efforts, including community comprehensive plans and WDNR master plans.
- Develop a comprehensive management approach that provides a framework for addressing landscapescale opportunities for colonial waterbirds within each Ecological Landscape.
- Experiment with techniques to promote tree regeneration at colony sites and to test the effectivenes of artificial nesting platforms at selective sites (e.g., Four Mile Island).
- A long-term monitoring program is needed at extant colony sites to document trends over time.
- Develop informational materials for private landowners and update informational and educational materials for the public.
- Wisconsin should initiate the organization of an inter-agency partnership of state and federal agencies, private, and non-profit conservation partners to determine common goals and strategies for great egrets and other colonial waterbirds along the Upper Mississippi River.

Snowy Egret (Egretta thula)

Species Assessment Scores*

State rarity:	5
State threats:	2
State population trend:	3
Global abundance:	3
Global distribution:	1
Global threats:	3
Global population trend:	1
Mean Risk Score:	2.6
Area of importance:	1

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
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species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Submergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Submergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Submergent marsh

Threats and Issues

- Wetland habitat loss and degradation due to loss of floodplain forest trees used for nesting or loss of shrubs/trees in estuarine/bay wetland habitats. This species nests in trees or shrubs, sometimes on the ground or in marsh vegetation, usually in association with other colonial waterbirds. This species has always been a rare nesting species in the state, with breeding records from northeastern Wisconsin.
- Organochlorine contamination during the non-breeding season (in Mexico) was attributed to poor reproductive sucess in Idaho.

- Generally, preservation of floodplain forests and large wetland complexes that include shrub carr
 elements will foster favorable breeding conditions for this rare species. Actions that protect large
 blocks of floodplain forests, shallow marshes and adjacent shrub communities, or island sites
 dominated by shrubs and young trees used by breeding Black-crowned Night-Herons, may favor
 establishment of Snowy Egrets.
- A long-term monitoring program of waterbirds breeding along the Mississippi River and in the Green Bay area, and in other locations used by Black-crowned Night-Herons, is recommended. Training of

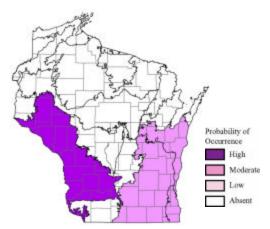
natural resource managers and public partners to identify life history aspects and breeding habitat requirements of Snowy Egrets is also advised. The Wisconsin Bird Conservation Initiative is an important ally that could help promote the inclusion of Snowy Egret monitoring in a long-term state waterbird monitoring effort.

Yellow-crowned Night-Heron (Nyctanassa violacea)

Species Assessment Scores*

State rarity:	5
State threats:	3
State population trend:	3
Global abundance:	4
Global distribution:	2
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.3
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Ephemeral pond
Central Lake Michigan Coastal	Floodplain forest
Central Lake Michigan Coastal	Warmwater rivers
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Ephemeral pond
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Shrub-carr
Southeast Glacial Plains	Southern hardwood swamp
Southeast Glacial Plains	Warmwater rivers
Southern Lake Michigan Coastal	Ephemeral pond
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Ephemeral pond
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Shrub-carr
Western Coulee and Ridges	Submergent marsh
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Hydrologic regimes along riverways that impede forest regeneration are a threat.
- Loss of large blocks of floodplain forest along Wisconsin's major riverways reduces available habitat.
- Invasives that impact the long-term health of the forest are a threat.

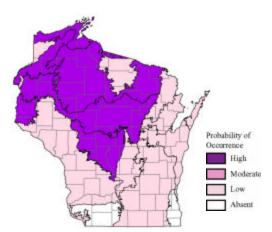
- Protection of large areas of mature floodplain forests.
- Conduct research to better understand the current status of this species.

Trumpeter Swan (Cygnus buccinator)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	1
Global abundance:	5
Global distribution:	4
Global threats:	4
Global population trend:	1
Mean Risk Score:	3.4
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Emergent marsh
Central Sand Plains	Impoundments/Reservoirs
Central Sand Plains	Submergent marsh
Forest Transition	Emergent marsh
Forest Transition	Impoundments/Reservoirs
Forest Transition	Submergent marsh
North Central Forest	Emergent marsh
North Central Forest	Emergent marsh - wild rice
North Central Forest	Impoundments/Reservoirs
North Central Forest	Inland lakes
North Central Forest	Submergent marsh
Northwest Sands	Emergent marsh
Northwest Sands	Emergent marsh - wild rice
Northwest Sands	Inland lakes
Northwest Sands	Submergent marsh
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Emergent marsh - wild rice
Superior Coastal Plain	Shore fen
Superior Coastal Plain	Submergent marsh
Western Prairie	Emergent marsh
Western Prairie	Submergent marsh

- Processes or actions that affect water level stability of breeding habitat is an ongoing concern.
 Negative, long-term changes in population levels could affect the recovery of this state-endangered bird.
- Wetland habitat loss through dredging, draining, or alteration resulting in degradation is a significant threat. Other threats include power lines, illegal harvest, lead poisoning from spent lead pellets in the

- substrate, snapping turtle predation of young cygnets (<5 weeks old), and competition with Mute Swans for nesting territories that may result in displacement or injury.
- Purple loosetrife may degrade wetland quality and affect/limit nest site selection.
- Chemical contamination of wetland waters is a concern but its impact on breeding Trumpeter Swans is currently unknown.
- Disturbance of nest sites by curious onlookers is an ongoing concern and has the potential to disrupt nesting avtivities, which may be especially critical during incubation or early post-hatching (<24 hrs after hatching).
- Wintering Trumpeters may be at risk because of inadequate and declining winter habitat due to development. Increased shoreline development and associated use of lakes by humans during nesting and brood rearing in the spring is also a threat.

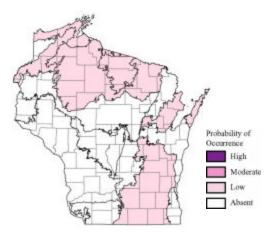
- Public and private actions are needed to maintain, restore, and/or protect large emergent marsh
 wetland complexes, sedge marshes, flowages, and isolated beaver ponds known to serve as Trumpeter
 Swan nesting habitat.
- Discourage (e.g., through posting) human activity near active nests.
- Research the potential impacts of chemical contaminants on breeding.
- Publishing results of long-term monitoring, training of local volunteers and wildlife managers to
 monitor breeding swans, and news releases/community presentations will be important to tracking the
 changes in Trumpeter populations. It will take a network of public and private partners to monitor
 nesting success and long-term population changes.

American Black Duck (Anas rubripes)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	5
Global abundance:	4
Global distribution:	4
Global threats:	4
Global population trend:	5
Mean Risk Score:	4.1
Area of importance:	3

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
North Central Forest	Emergent marsh
North Central Forest	Northern sedge meadow
North Central Forest	Open bog
North Central Forest	Submergent marsh
Northern Highland	Emergent marsh
Northern Highland	Emergent marsh - wild rice
Northern Highland	Northern sedge meadow
Northern Highland	Open bog
Northern Highland	Submergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Northern sedge meadow
Northwest Sands	Emergent marsh
Northwest Sands	Emergent marsh - wild rice
Northwest Sands	Northern sedge meadow
Northwest Sands	Open bog
Northwest Sands	Submergent marsh
Southeast Glacial Plains	Emergent marsh
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Emergent marsh - wild rice
Superior Coastal Plain	Open bog
Superior Coastal Plain	Submergent marsh

- Competition with Mallards, resulting from habitat alteration.
- Genetic swamping from interbreeding with Mallards.
- American Black Ducks are extremely sensitive to human disturbances; urbanization and human encroachment into wintering and breeding areas keep birds from occupying suitable habitats (Longcore *et al.* 2000, Jahn and Hunt 1964).

- Agricultural pesticides may be a concern.
- Botulism may be a concern.

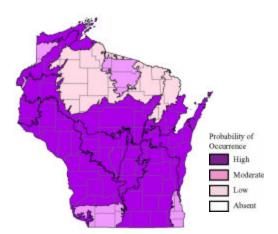
- Localized efforts can be made to protect wintering areas of American Black Ducks from further degradation. Fencing lands with predator-proof fences can be done where practical and drawdowns can be scheduled to encourage growth of mudflat annuals, regenerate stands of emergent vegetation, stimulate primary productivity, and in turn improve the detrital base (Kenow and Rusch 1996).
- Improve methods to monitor future regional changes in populations.
- Obtain more accurate annual survival rates by increasing the size of the banded sample (Longcore *et al.* 2000).
- Construct impoundments of sufficient size and isolation in appropriate forested landscapes to ensure recruitment (Longcore *et al.* 2000) (e.g., restoration of wild rice areas in northen Wisconsin).
- Improve methods to monitor hybrid numbers (Longcore et al. 2000).
- Research the effects of human-caused disturbances relative to population changes. Determine how disturbances during the fall hunting season affects body condition and subsequent survival in winter (Longcore *et al.* 2000).

Blue-winged Teal (Anas discors)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	5
Global abundance:	2
Global distribution:	1
Global threats:	3
Global population trend:	2
Mean Risk Score:	2.7
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

•	o o
Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Sand Hills	Emergent marsh
Central Sand Hills	Impoundments/Reservoirs
Central Sand Hills	Inland lakes
Central Sand Hills	Southern sedge meadow
Central Sand Hills	Wet-mesic prairie
Central Sand Plains	Emergent marsh
Central Sand Plains	Floodplain forest
Central Sand Plains	Impoundments/Reservoirs
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Surrogate grasslands
Forest Transition	Emergent marsh
Forest Transition	Impoundments/Reservoirs
Northern Highland	Emergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Northern sedge meadow
Northwest Sands	Emergent marsh
Northwest Sands	Emergent marsh - wild rice
Northwest Sands	Inland lakes
Northwest Sands	Northern sedge meadow
Northwest Sands	Submergent marsh
Northwest Sands	Surrogate grasslands
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Southern sedge meadow
Southeast Glacial Plains	Surrogate grasslands
Southeast Glacial Plains	Wet-mesic prairie

Ecological Landscape	Community
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Emergent marsh - wild rice
Superior Coastal Plain	Submergent marsh
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Submergent marsh
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Emergent marsh
Western Prairie	Mesic prairie
Western Prairie	Surrogate grasslands

Threats and Issues

- Succession of grassland habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth can reduce grassland nesting habitat.
- Water use activities that result in the loss of, or negative impacts on, brood water (semi-permanent and permanent wetlands) and pair water (a mix of temporary, seasonal, semi-permanent, and permanent wetlands). Watercraft activity may significantly disrupt courtship, mating, feeding, or brood-rearing behaviors on waterbodies.
- Wetland drainage can also eliminate brood and pair water.
- Intensification of agriculture, including early and frequent harvest of hay, and conversion of grassland to row crops or tree plantations.
- Disturbance of grassland nesting cover during the breeding season (e.g., early mowing of hay) can prevent nest establishment or successful nesting.
- Blue-winged Teal is a neotropical migrant and faces threats due to habitat conversion or alteration on wintering and migration grounds as well.
- Aggressive, herbaceous invasive species, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods, can degrade habitat quality of grasslands for this species.
- Agricultural pesticides may pose a threat in certain cases, on winter, migration, and breeding grounds.

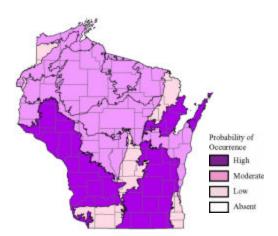
- Restoration of temporary and seasonal wetlands is particularly needed in agricultural landscapes (Gammonley and Fredrickson 1995).
- Continue agricultural set-aside and wetland restoration programs, especially those that allow for permanent protection of habitats.
- Work with planning and zoning authorities to protect valuable open wetland/grassland landscapes from being converted to urban or suburban development.
- Maintenance of optimal nesting habitat may require active management (allowing dead vegetation to accumulate and periodic burning, mowing, or grazing to prevent it from becoming too dense).
 Disturbance should be performed after the peak hatching period. Seeded dense nesting cover used by mallards and gadwalls seems to be less attractive to Blue-winged Teal (Gammonley and Fredrickson 1995).
- Partnerships are key for conserving this species in working agricultural landscapes.
- Control and eradicate aggressive invasive plants.

Canvasback (Aythya valisineria)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	2
Global threats:	4
Global population trend:	2
Mean Risk Score:	3.1
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Warmwater rivers
Forest Transition	Warmwater rivers
North Central Forest	Submergent marsh
North Central Forest	Warmwater rivers
Northern Highland	Submergent marsh
Northern Highland	Warmwater rivers
Northern Lake Michigan Coastal	Submergent marsh
Northern Lake Michigan Coastal	Warmwater rivers
Northwest Sands	Submergent marsh
Northwest Sands	Warmwater rivers
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Submergent marsh
Southeast Glacial Plains	Warmwater rivers
Superior Coastal Plain	Submergent marsh
Western Coulee and Ridges	Submergent marsh
Western Coulee and Ridges	Warmwater rivers
Western Prairie	Warmwater rivers

- Loss and degradation of large, shallow-water wetlands and associated submergent aquatic beds is a threat. This can occur through changes in hydrology due to dams, poor water clarity due to nutrient run-off, and invasive carp and plants.
- Canvasbacks are vulnerable to overhunting or other sources of increased mortality rates due to small population sizes.
- Recreational boating on key stopover sites can further stress already vulnerable birds.
- Lead poinsoning from ingestion of toxic shot.

- Restoration and management of large shallow-water systems that contain healthy submergent aquatic beds of wild celery and sago pondweed.
- Control/eradication of carp and invasive plant populations.
- Create voluntary waterfowl avoidance areas on key stopover sites during migration.
- Develop and implement education programs to limit illegal overharvest.
- Continue to promote the use of non-toxic shot.

Redhead (Aythya americana)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	2
Global threats:	4
Global population trend:	2
Mean Risk Score:	3.1
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape AssociationsPlease note that this is not a range map. Shading

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Submergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Submergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Emergent marsh - wild rice
Southeast Glacial Plains	Submergent marsh
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Emergent marsh - wild rice
Western Coulee and Ridges	Submergent marsh

Threats and Issues

- Loss and degradation of deep water marshes in East-Central Wisconsin.
- Carp and other invasive exotic wetland species are a threat to the health of the aquatic ecosystems that Redheads use for breeding and migration.
- Lead from shotshells has historically been a source of mortality.
- Redheads are sensitive to disturbance during migration on staging areas.

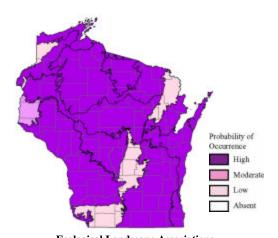
- Continue to restore and manage deep water marsh complexes within the greater Horicon Marsh area in east-central Wisconsin.
- Work to control the spread of invasives in these ecosystems including the use of drawdowns and other water level management techniques to control invasive species.
- Research and develop methods to restore submergent aquatic beds in large shallow-water lakes.

Lesser Scaup (Aythya affinis)

Species Assessment Scores*

State rarity:	5
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	2
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.4
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Submergent marsh
Central Lake Michigan Coastal	Warmwater rivers
Central Sand Plains	Impoundments/Reservoirs
Central Sand Plains	Submergent marsh
Forest Transition	Impoundments/Reservoirs
Forest Transition	Submergent marsh
Forest Transition	Warmwater rivers
North Central Forest	Impoundments/Reservoirs
North Central Forest	Inland lakes
North Central Forest	Submergent marsh
North Central Forest	Warmwater rivers
Northern Highland	Emergent marsh - wild rice
Northern Highland	Inland lakes
Northern Highland	Submergent marsh
Northern Highland	Warmwater rivers
Northern Lake Michigan Coastal	Submergent marsh
Northern Lake Michigan Coastal	Warmwater rivers
Northwest Sands	Emergent marsh - wild rice
Northwest Sands	Inland lakes
Northwest Sands	Submergent marsh
Northwest Sands	Warmwater rivers
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Submergent marsh
Southeast Glacial Plains	Warmwater rivers
Superior Coastal Plain	Emergent marsh - wild rice
Superior Coastal Plain	Submergent marsh
Western Coulee and Ridges	Submergent marsh
Western Coulee and Ridges	Warmwater rivers

Threats and Issues

- Loss and degradation of deep water marshes and shallow lakes used as migratory stopover areas.
- Housing development and associated increase in watercraft use on northern Wisconsin lakes during spring and fall migration might be affecting stopover use.
- Female Lesser Scaups migrating in the Mississippi Flyway had reduced fresh body masses, lipid reserves, and nutrient reserves by the time they reached northwestern Minnesota in spring, enough to potentially reduce reproductive success; likely causes of body condition include a landscape-scale decline in the availability and/or quality of forage due to poor water quality and habitat related issues (Anteau 2002).
- Lesser and Greater Scaup have switched to eating zebra mussels along the Great Lakes and Mississippi River leading to suspicion and some research indicating that they might be bioaccumulating contaminants.
- Various bacterial infections and nematodes (related to an exotic snail) have caused large die-offs in recent years.
- Lack of information on where the Lesser Scaup that migrate through Wisconsin winter and nest.

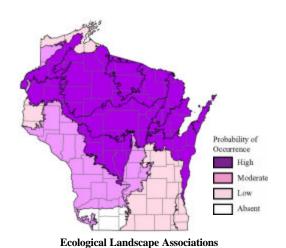
- Continue to research impacts of forage quality at stopover areas on reproductive output and condition. Provide high quality forage in key stopover areas within the Great Lakes and Mississippi River flyways. Consider the use of refuges at key stopover locations to increase the availability of high-quality forage for resting birds.
- Research Lesser Scaup life history including potential differences between sub-populations that nest in boreal forest and those that nest in prairie/ parkland.
- Work with Tribes to restore and enhance wild rice areas in northern Wisconsin.

Osprey (Pandion haliaetus)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	1
Global abundance:	4
Global distribution:	1
Global threats:	2
Global population trend:	1
Mean Risk Score:	2.1
Area of importance:	2

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<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Warmwater rivers
Central Sand Plains	Impoundments/Reservoirs
Forest Transition	Impoundments/Reservoirs
Forest Transition	Warmwater rivers
North Central Forest	Impoundments/Reservoirs
North Central Forest	Inland lakes
North Central Forest	Warmwater rivers
Northeast Sands	Warmwater rivers
Northern Highland	Inland lakes
Northern Highland	Warmwater rivers
Northern Lake Michigan Coastal	Warmwater rivers
Northwest Sands	Inland lakes
Northwest Sands	Warmwater rivers

- The loss of snags that may provide nest sites, or removal of nests on utility poles is an ongoing concern as is the loss or alteration of wetland habitats.
- Bioaccumulation of organochlorines has been well-documented because of the species position at the
 top of the food chain. Bioaccumulation of contaminants continues to be a concern, though some
 organochlorines are no longer in use.
- Recreational activities that interfere with nesting may cause desertion of nests or the death of eggs/young.
- Powerline collisions/trauma may be a threat.
- Lead poisoning is a threat.
- Mercury exposure may be a concern.
- Expansion of Bald Eagle population has excluded Osprey from some northern lakes.

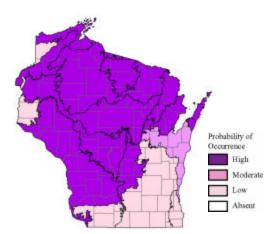
- Continue recovery of Osprey populations through management of nest sites, including working with utilities, which play a large, cooperative role.
- Stabilization of water levels in managed lakes may lead to increases in fish abundance that benefit Osprey.
- Protect more large waterbodies from recreational uses that discourage osprey. Since eagles have
 displaced osprey from certain areas, it is necessary to offer more protection for the areas osprey are
 using.
- Periodic monitoring of contaminants is recommended.

Bald Eagle (Haliaeetus leucocephalus)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	1
Global abundance:	4
Global distribution:	2
Global threats:	3
Global population trend:	1
Mean Risk Score:	2.4
Area of importance:	4

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Impoundments/Reservoirs
Central Sand Hills	Inland lakes
Central Sand Hills	Warmwater rivers
Central Sand Plains	Impoundments/Reservoirs
Forest Transition	Impoundments/Reservoirs
Forest Transition	Warmwater rivers
North Central Forest	Impoundments/Reservoirs
North Central Forest	Inland lakes
North Central Forest	Warmwater rivers
Northeast Sands	Warmwater rivers
Northern Highland	Inland lakes
Northern Highland	Warmwater rivers
Northern Lake Michigan Coastal	Warmwater rivers
Northwest Sands	Inland lakes
Northwest Sands	Warmwater rivers
Western Coulee and Ridges	Warmwater rivers

- Road building and home construction in the woods is a threat to Bald Eagles.
- Lead poisoning threatens this species as a result of feeding on animals/carcasses contaminated with lead shot, bullet fragments, or fishing sinkers.
- PCB's, DDT residues, and agricultural pesticides.
- Approaching nests too closely during critical nesting periods.
- Accidental shooting remains an issue.
- Collision with vehicles while feeding on road kill is a source of mortality.

• Wind towers, communication towers, electrical transmission lines, and fences are potential threats if placed in or near habitats frequently used by bald eagles.

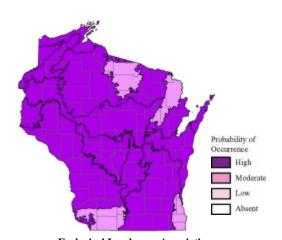
- Preserve habitat around Bald Eagle nests.
- Time timber harvest activity so as not to disturb nesting eagles.
- Preserving nest trees and alternative nest trees.
- Evaluate contaminant levels in birds and eggs.
- Monitor nesting population levels and productivity.
- Educate the public regarding Bald Eagle populations and conservation.
- Continue monitoring and research on Lower Wisconsin River Eagle Syndrome.
- Promote public Bald Eagle viewing festivals and events, which also bring ecotourism dollars into communities.
- Continue to work cooperatively with the US Fish and Wildlife Service, US Forest Service, and neighboring states on Bald Eagle conservation and population management.

Northern Harrier (Circus cyaneus)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	2
Global abundance:	3
Global distribution:	1
Global threats:	3
Global population trend:	4
Mean Risk Score:	2.9
Area of importance:	4

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Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Wet-mesic prairie
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Surrogate grasslands
North Central Forest	Northern sedge meadow
Northern Lake Michigan Coastal	Northern sedge meadow
Northwest Lowlands	Northern sedge meadow
Northwest Sands	Northern sedge meadow
Northwest Sands	Surrogate grasslands
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southeast Glacial Plains	Wet-mesic prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Mesic prairie
Western Prairie	Surrogate grasslands

- Succession of preferred habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth.
- Flooding of wet meadows.
- Intensification of agriculture, including early and frequent harvest of hay and conversion of idle grassland and wet meadows to harvested cropland especially row crops or to tree plantations.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.
- Habitat fragmentation is an issue for this area-sensitive species.
- Overgrazing reduces habitat quality for this species.
- Aggressive invasive forbs, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods, can degrade habitat quality of grasslands for this species.

• Agricultural pesticides may pose a threat to this species.

- Keep agricultural set-aside programs in place, especially those that allow for permanent protection of preferred habitats.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Provide incentives for delaying hay harvest until after the breeding season.
- Partnerships are key for conserving this species in working agricultural landscapes.
- Conduct research to determine if wind farm development harms this species.
- Work to maintain healthy populations of grassland small mammals as a prey base via maintenance of extensive open and idle grasslands.

Northern Goshawk (Accipiter gentilis)

Species Assessment Scores*

State rarity:	4
State threats:	3
State population trend:	3
Global abundance:	4
Global distribution:	1
Global threats:	3
Global population trend:	3
Mean Risk Score:	3
Area of importance:	2

^{*} Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Northern mesic forest
Central Sand Plains	White pine-red maple swamp
Forest Transition	Northern mesic forest
North Central Forest	Boreal forest
North Central Forest	Hardwood swamp
North Central Forest	Northern dry -mesic forest
North Central Forest	Northern mesic forest
North Central Forest	Northern wet-mesic forest
Northeast Sands	Northern dry -mesic forest
Northeast Sands	Northern mesic forest
Northern Highland	Northern dry -mesic forest
Northern Highland	Northern mesic forest
Northern Lake Michigan Coastal	Boreal forest
Northern Lake Michigan Coastal	Northern dry -mesic forest
Northern Lake Michigan Coastal	Northern mesic forest
Northern Lake Michigan Coastal	Northern wet-mesic forest
Northwest Lowlands	Northern mesic forest
Northwest Sands	Northern dry -mesic forest

- Forest management activities that do not follow guidelines for goshawk management have the potential to affect nesting success and, hence, population levels of this species.
- Human use of forest roads and trails near nest sites during the breeding and nesting seasons may disturb goshawks and cause them to abandon nests and possibly territories.
- Lead poisoning in addition to anticoagulant rodenticides may pose a threat.
- Existing data regarding Northern Goshawks are not sufficient to evaluate a population trend anywhere in North America.

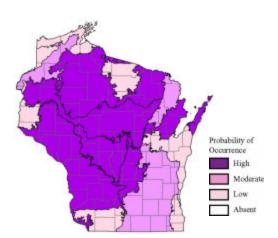
- Follow sustainable forest management guidelines for Northern Goshawk (Woodford 2004).
- Educate the public regarding Northern Goshawk populations and conservation.
- Evaluate and monitor lead levels in birds.
- Implementation of a bioregional monitoring design may provide the data needed to complete a status assessment of Northern Goshawk in Wisconsin.

Red-shouldered Hawk (Buteo lineatus)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	5
Global abundance:	3
Global distribution:	2
Globalthreats:	2
Global population trend:	1
Mean Risk Score:	2.7
Area of importance:	2

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Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Floodplain forest
Central Sand Plains	Floodplain forest
Central Sand Plains	Southern dry-mesic forest
Central Sand Plains	White pine-red maple swamp
Forest Transition	Ephemeral pond
Forest Transition	Floodplain forest
Forest Transition	Northern mesic forest
North Central Forest	Ephemeral pond
North Central Forest	Floodplain forest
North Central Forest	Northern mesic forest
Northern Lake Michigan Coastal	Ephemeral pond
Northern Lake Michigan Coastal	Floodplain forest
Northern Lake Michigan Coastal	Northern mesic forest
Southeast Glacial Plains	Floodplain forest
Western Coulee and Ridges	Ephemeral pond
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest

- One of several raptors adversely affected by organohalogens.
- Hydrological alterations due to dams may be a long-term detriment to the health of floodplain forests and thus be a threat to Red-shouldered Hawk habitat.
- Loss and fragmentation of large blocks of forest, particularly riparian forests.
- A reduction in forest canopy cover, or removal of nesting trees, can be detrimental to this species.
 Red-tailed Hawks can outcompete Red-shouldered Hawks in forests with parially open canopies.

- Human use of forest roads and trails near nest sites during the breeding and nesting seasons may disturb Red-shouldered Hawks and cause them to abandon nests and possibly territories.
- Invasive plants such as reed canary grass or buckthorn are a threat to the long-term health of the floodplain forest systems.

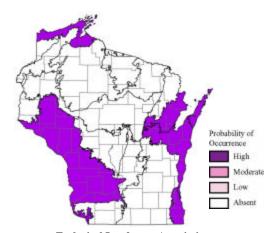
- This area-sensitive species benefits from maintenance of large blocks of relatively undisturbed, mature mixed riparian woods and mature upland deciduous woods (with a preference for bottomlands and wooded margins adjacent to marshes) where at least 70% or more of the canopy is retained. Protection and conservation of old-growth characteristics in appropriate habitat would benefit this species.
- Designating Red-shoulder Hawk nesting territories is recommended where and when appropriate.
 Bryant (1986) recommends leaving an uncut buffer zone around traditional Red-shouldered Hawk nests to discourage Red-tailed Hawks.
- Research is needed to evaluate how Red-shouldered Hawks respond to different management regimes.

Peregrine Falcon (Falco peregrinus)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	1
Global abundance:	3
Global distribution:	1
Global threats:	3
Global population trend:	1
Mean Risk Score:	2.6
Area of importance:	2

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Dry cliff
Northern Lake Michigan Coastal	Dry cliff
Southern Lake Michigan Coastal	Dry cliff
Superior Coastal Plain	Dry cliff
Western Coulee and Ridges	Dry cliff

Threats and Issues

- Expansion of housing on private property that includes (dry) cliff habitat, the only natural community type where Peregrines currently occur.
- Chemical contamination persists as a potential limiting factor for this species.
- Rock climbing on cliffs is another potential threat to this species.
- Building and powerline collisions/trauma may pose a threat.
- Exposure to avicides are a concern.

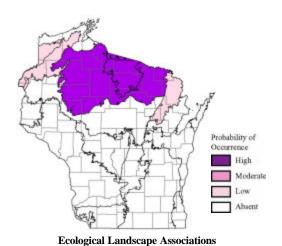
- Identification and protection of suitable cliff habitats along the Mississippi River and Door County peninsula on Lake Michigan.
- Continuing cooperation with Lake Michigan and Mississippi River utilities and other municipal entities to allow nest boxes to be installed, maintained, and monitored.
- Continuing education is essential to the success of the peregrine falcon recovery effort, both through periodic program updates, public talks, and newspaper outlets.

Spruce Grouse (Falcipennis canadensis)

Species Assessment Scores*

State rarity:	5
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	1
Global threats:	2
Global population trend:	1
Mean Risk Score:	2.6
Area of importance:	2

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
North Central Forest	Boreal forest
North Central Forest	Northern dry forest
North Central Forest	Northern wet forest
North Central Forest	Open bog
Northeast Sands	Northern dry forest
Northeast Sands	Northern wet forest
Northern Highland	Boreal forest
Northern Highland	Bracken grassland
Northern Highland	Northern dry forest
Northern Highland	Northern wet forest
Northern Highland	Open bog
Northwest Lowlands	Northern wet forest
Northwest Lowlands	Open bog
Northwest Sands	Northern dry forest
Northwest Sands	Northern wet forest
Northwest Sands	Open bog

- Patchy distribution and small average population size in the southern portion of its range (including Wisconsin) make the spruce grouse vulnerable to extirpation (NatureServe 2005).
- Conversion or succession of jack pine forests to deciduous species has led to population declines (Robinson 1980).
- Loss, degradation and fragmentation of relatively young short-needled conifer forests, which are essential habitat for Spruce Grouse (Boag and Schroeder 1992).
- Spruce grouse are particularly vulnerable to hunting and exploitation because they are not wary of humans. Even though a non-game species in Wisconsin, some accidental take by humans occurs (NatureServe 2005).

• Need to gain a better understanding of current population sizes and distribution in Wisconsin.

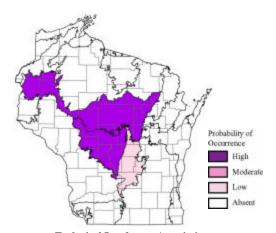
- Spruce grouse can benefit from forest management designed to retain pockets of short-needled conifers (spruce and fir with brances close to the ground) in mid-successional stages. For long term maintenance of populations, a large area with a mosaic of even-aged stands of jack pine and jack pine-spruce including an array of different age classes is probably ideal (Boag and Schroeder 1992)
- Education of upland game hunters in the vicinity of spruce grouse populations can be used to reduce accidental take.
- More research and inventory is needed to determine current population sizes, proper habitat management regimes, and where critical habitat exists.

Greater Prairie-Chicken (Tympanuchus cupido)

Species Assessment Scores*

State rarity:	4
State threats:	5
State population trend:	4
Global abundance:	3
Global distribution:	5
Global threats:	4
Global population trend:	5
Mean Risk Score:	4.3
Area of importance:	2

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Landscape -community Combinations of Highest Ecological Priority

	a
Ecological Landscape	Community
Central Sand Hills	Wet-mesic prairie
Central Sand Plains	Dry prairie
Central Sand Plains	Dry-mesic prairie
Central Sand Plains	Mesic prairie
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Sand prairie
Central Sand Plains	Shrub-carr
Central Sand Plains	Southern sedge meadow
Central Sand Plains	Surrogate grasslands
Central Sand Plains	Wet-mesic prairie
Forest Transition	Northern sedge meadow
Forest Transition	Surrogate grasslands

- Succession of preferred habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth.
- Intensification of agriculture, including conversion of grassland to row crops, tree plantations, or cranberry bogs.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.
- Habitat fragmentation is an issue for this area-sensitive species, which requires large blocks of grassland in an open, treeless landscape of at least 10,000 acres.
- Heavy grazing and over grazing reduce habitat quality for this species.
- Aggressive invasive forbs, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.

- Agricultural pesticides may pose a threat.
- Utility lines and wire fences are a known mortality factor for this species.
- Low genetic diversity has been documented, which may negatively affect the species' reproductive parameters. Loss of genetic diversity is exacerbated by isolation of sub-populations due to negative land use changes.

- Continue agricultural set-aside programs, especially those that allow for permanent protection of preferred habitats.
- Work with planning and zoning authorities to protect valuable open grassland/barrens landscapes from being converted to urban or suburban development.
- Provide incentives for delaying hay harvest until after the breeding season.
- Partnerships are key for working to benefit this species in working agricultural landscapes.
- Restore genetic diversity by re-connecting sub-populations and translocating birds from out of state.

Sharp-tailed Grouse (Tympanuchus phasianellus)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	4
Global abundance:	3
Global distribution:	2
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.3
Area of importance:	3

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

	Ecological Landscape	Community
(Central Sand Plains	Northern sedge meadow
(Central Sand Plains	Oak barrens
(Central Sand Plains	Pine barrens
(Central Sand Plains	Surrogate grasslands
]	North Central Forest	Northern sedge meadow
]	Northeast Sands	Bracken grassland
]	Northeast Sands	Pine barrens
]	Northwest Sands	Northern sedge meadow
]	Northwest Sands	Open bog
]	Northwest Sands	Pine barrens
]	Northwest Sands	Surrogate grasslands

Threats and Issues

- Need to restore large blocks of open barrens through harvest or fire.
- Housing development reduces opportunities for large-scale management through timber harvest and/or fire.
- Conversion of barrens/jack pine forest to red pine plantations is a significant long-term threat.
- Since we have low population sizes in Wisconsin, care should continue to be taken to ensure overharvest does not occur.
- It is not clear how invasives such as spotted knapweed will affect Sharp-Tailed Grouse.
- Remaining populations are somewhat isolated and genetic drift could become a serious issue.

Priority Conservation Actions

• Since this species requires large areas of grassland/barrens, the best management and preservation opportunities are on public land.

- Continue to build barrens partnerships in appropriate landscapes.
- Create habitat corridors and consider translocations to restore genetic variability within isolated populations.
- Create financial incentives to incorporate large aggregated clearcuts in and around managed core areas. This will require sound long-term planning. This strategy could be used in conjuction with management for Kirtland's Warbler and Connecticut Warbler, as well as the other barrens species.

Northern Bobwhite (Colinus virginianus)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	4
Global abundance:	2
Global distribution:	2
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.3
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
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species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Surrogate grasslands
Central Sand Hills	Wet-mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Oak opening
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Dry prairie
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Oak opening
Western Coulee and Ridges	Surrogate grasslands

Threats and Issues

- Intensification of agriculture, especially monocultures. This species benefits from grass-based agriculture mixed with brushy, grassy areas in the landscape.
- Housing and commercial developement in rural landscapes fragments habitat.
- Overgrazing lowers habitat quality for this species.

- Private lands initiatives that increase nesting cover and shrub patchiness might help this and other shrub/grassland species. The suitability of cropfields as habitat can be improved by providing adjacent strips of early-successional herbaceous vegetation. Retaining thorny brush on grazed areas provides protection for nesting birds.
- Use of prescribed fire is beneficial. Numbers of individuals are higher in areas managed by fire than those not burned. Prescribed fire increases arthropod abundance and facilitates travel of chicks

through groundcover vegetation. Fire also reduces hardwood encroachment and promotes the sun-loving groundcover plant species essential for food and cover.

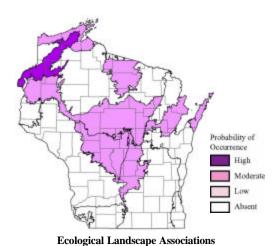
• Grazing in quality Northern Bobwhite habitat areas should be avoided.

Yellow Rail (Coturnicops noveboracensis)

Species Assessment Scores*

State rarity:	5
State threats:	3
State population trend:	3
Global abundance:	5
Global distribution:	4
Global threats:	4
Global population trend:	3
Mean Risk Score:	3.9
Area of importance:	2

^{*} Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Please note that this is not a range map. Shading

does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Northern sedge meadow
Central Sand Hills	Open bog
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Open bog
Forest Transition	Northern sedge meadow
Forest Transition	Open bog
Northern Highland	Northern sedge meadow
Northern Highland	Open bog
Northern Lake Michigan Coastal	Northern sedge meadow
Northwest Sands	Northern sedge meadow
Northwest Sands	Open bog
Superior Coastal Plain	Northern sedge meadow
Superior Coastal Plain	Open bog
Superior Coastal Plain	Shore fen

- Drainage or flooding (altered hydrology) of large northern sedge meadows preferred by this species. Conversion of drained sedge meadows to other land uses.
- Succession of preferred wetland habitats to shrub carr, due to lack of fire or other management to supress woody growth.
- Lack of population size and distribution data for this secretive species.
- Habitat fragmentation may also be an issue for this species.
- Yellow Rails do not tolerate grazing.
- Invasion by exotic species such as reed canary grass, purple loosestrife, etc., can degrade habitat quality.

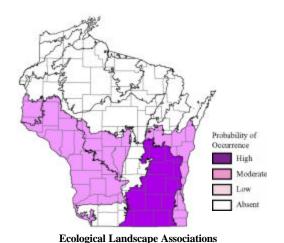
- Surveys of sedge meadow habitat for Yellow Rail are needed to monitor this species and find additional breeding sites.
- Conduct research on site fildelity and methods of habitat maintenance that will promote breeding and population stability.
- Educate public on the value of large sedge meadows.
- Work to preserve and maintain condition of large expanses of northern sedge meadows, including
 allowing the natural fluctuation of water levels in sedge meadow habitat, burning to control woody
 shrubs and prevent their encroachment, and preserving hummocky areas within wetlands.

King Rail (Rallus elegans)

Species Assessment Scores*

State rarity:	4
State threats:	2
State population trend:	3
Global abundance:	4
Global distribution:	4
Global threats:	4
Global population trend:	5
Mean Risk Score:	3.7
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Southern sedge meadow
Central Sand Plains	Emergent marsh
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Southern sedge meadow
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Northern sedge meadow
Southeast Glacial Plains	Southern sedge meadow
Southern Lake Michigan Coastal	Emergent marsh
Southern Lake Michigan Coastal	Southern sedge meadow
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Southern sedge meadow
Western Prairie	Emergent marsh

Threats and Issues

- Disruption of hydrology can impact wetland quality and extent. King Rails often use adjacent grasslands and shallow, dry marshes, thus unusually high water levels can negatively impact this species.
- Loss of emergent wetlands south of the tension zone to agriculture, dams, filling, development, etc.
- It is not known how King Rail populations respond to exotic invasives like purple loosestrife and giant reed grass.

- Habitat protection and restoration through the Wetland Reserve Program, North American Wetland Conservation Act, and other wetland management, protection, and restoration efforts will be key to conservation success.
- More research is needed on all rails as very little is known.

•	Research is also needed to help blend waterfowl conservation actions with conservation actions for species such as King Rails.

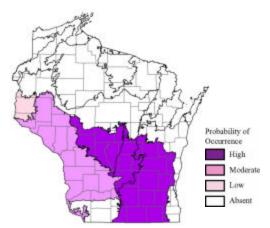
Wisconsin's Strategy for Wildlife Species of Greatest Conservation Need

Whooping Crane (Grus americana)

Species Assessment Scores*

State rarity:	NA
State threats:	4
State population trend:	3
Global abundance:	5
Global distribution:	5
Global threats:	5
Global population trend:	3
Mean Risk Score:	4.2**
Area of importance:	3

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Emergent marsh
Central Sand Hills	Southern sedge meadow
Central Sand Hills	Submergent marsh
Central Sand Plains	Emergent marsh
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Open bog
Central Sand Plains	Submergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Southern sedge meadow
Southeast Glacial Plains	Submergent marsh
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Submergent marsh

- Wind towers, communication towers, electrical transmission lines, and fences are potential threats if placed in or near habitats frequently used by Whooping Cranes.
- Preservation of remaining isolated, quiet wetlands that are needed for breeding habitat is critical.
- Foraging in areas that have been landspread or filled with wastes (sludge or biosolids) high in bioaccumulative organics will threaten reproductive success.
- Motor-powered activities in vicinity of nesting will likely disrupt successful breeding.
- Conflicts with agricultural interests, such as crop depredations, are an issue.
- Accidental shooting is a potential threat.

^{**} Based on fewer than the standard 7 criteria.

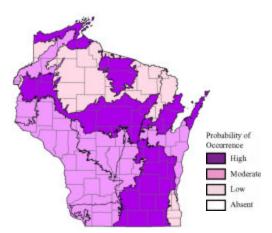
- Enhance and preserve large tracts of isolated shallow marsh wetlands, river bottoms, and sedge meadow.
- Specific management actions can be determined after more information is acquired regarding specific habitat preferences and species abundance in Wisconsin. At this date of Whooping Crane restoration efforts, we lack specific habitat preference data.
- Continue development of a Wisconsin Whooping Crane Management Plan.
- Collaboration with the Great Wisconsin Birding and Nature Trail, tourism efforts, and the Wisconsin birding community will add to community support and awareness.
- Payment incentives for private landowner restoration may be useful if Whooping Cranes attempt nesting on private wetlands.
- Conduct research regarding the impacts that wind towers and motor-powered activities may have on Whooping Crane populations.

American Golden Plover (Pluvialis dominica)

Species Assessment Scores*

State rarity:	NA
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	3
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.2**
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Emergent marsh
Forest Transition	Impoundments/Reservoirs
Northern Highland	Emergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southeast Glacial Plains	Wet-mesic prairie
Superior Coastal Plain	Emergent marsh

- Dependent on ephemeral mudflats and shallow-flooded fields for resting and feeding sites during spring and fall migration. Temporary wetlands and flooded areas are not afforded legal protection.
- Changes in hydrology of large river systems through dikes, dredging, and dams have reduced the amount of shallow floodplain habitat available.
- Habitat loss and degredation from agriculture, urban development, and road-building have reduced the amount of foraging habitat available to migrating shorebirds.
- Several exotic species (e.g., zebra mussel, spiny water flea, Eurasian carp, purple loosestrife) have been introduced into shorebird habitats, but little is known about the effects of these species on migrant shorebirds.
- Agricultural pesticides (mainly organophosphates) are widely used throughout Central and South America, where millions of shorebirds winter. Shorebird mortality has occurred after "winter" applications of pesticides on agricultural fields.

^{**} Based on fewer than the standard 7 criteria.

• Industrial effluents have input toxic chemicals throughout the Great Lakes, thereby potentially affecting the invertebrate foods fueling migratory shorebirds.

- Create or manage shorebird habitat on public lands at flowages and impoundments. Through dikes, water levels can be raised to flood these areas, and through water control structures water levels can be manipulated to benefit shorebirds. Migration phenology and specific habitat requirements must be considered when managing for shorebirds. Detailed management guidelines for drawdowns (timing, water body size and depth, flooding/draining rate, etc.) are available in existing national and regional shorebird conservation plans (de Szalay et al. 2000, Skage et al. 1999, Helmers 1992).
- The Wisconsin Shorebird Survey (URL: http://www.uwgb.edu/birds/shorebird/index.htm) should continue as a long-term monitoring program that documents shorebird species richness and abundance and be expanded to include more managed and non-managed wetland sites.
- Evaluation of management techniques most successful in attracting spring and fall migrants should be a part of a long-term monitoring program at selected sites.
- Workshops for land managers to identify/implement strategies and techniques to manage wetlands to benefit shorebirds should occur periodically, perhaps every 5 years.
- A midwestern shorebird research and management conference featuring regional and national guest speakers/experts should occur at least once during the next decade.
- The production of materials to enhance life-long shorebird learning and emphasizing the importance of wetland ecosystems to Wisconsin's 41 shorebird species is encouraged as part of a landscape approach to integrated ecological learning and thinking.
- A variety of media outlets/devices (e.g., print, television, CD-ROM) should be used to increase public awareness and understanding of shorebirds in Wisconsin.
- Integrated governmental and non-governmental partnerships will be essential to a long-term strategy
 to promote and implement shorebird conservation in Wisconsin. A Wisconsin Shorebird Alliance
 Network (WISCONSAN) is suggested to promote the long-term conservation and management of
 Wisconsin's shorebirds.

Piping Plover (Charadrius melodus)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	3
Global abundance:	5
Global distribution:	4
Global threats:	5
Global population trend:	5
Mean Risk Score:	4.4
Area of importance:	1

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Great lakes beach
Central Lake Michigan Coastal	Great lakes dune
Central Lake Michigan Coastal	Interdunal wetland
Northern Lake Michigan Coastal	Great lakes beach
Northern Lake Michigan Coastal	Great lakes dune
Northern Lake Michigan Coastal	Interdunal wetland
Southern Lake Michigan Coastal	Great lakes beach
Southern Lake Michigan Coastal	Great lakes dune
Superior Coastal Plain	Great lakes beach
Superior Coastal Plain	Great lakes dune
Superior Coastal Plain	Interdunal wetland

- The federal and state endangered Piping Plover uses Wisconsin freshwater wetland habitats during its life cycle. These habitats are subject to natural and human disturbance, which may subject the species to changes in habitat availability. On the Great Lakes, the loss of sandy beaches and other littoral habitats to recreational/commercial development and dune stabilization have greatly contributed to the decline of the species. Historical Piping Plover nesting sites in the Great Lakes have been destroyed by high water levels, flooding, or eroding beaches. In southeastern Wisconsin (along Lake Michigan), rirapping of extensive beach habitats and development have eliminated former historic nesting sites.
- Piping Plover winter habitats are threatened by industrial or urban expansion, and site quality may be threatened by increasing human use of beaches for recreation. Oil spills are another potential threat during winter as is the stabilization (promoting vegetative growth) of barrier islands and sand flats.

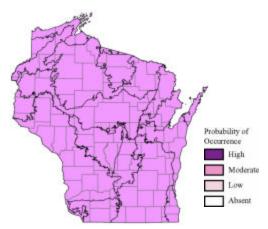
- Monitor and protect federally designated "critical habitat."
- Work with the U.S. Army Corps of Engineers and the US Fish and Wildlife Service to develop longrange plans for the deposition of "clean" dredge spoil sediments and the creation of appropriate dredge spoil islands in locations likely to attract breeding Piping Plovers.
- Survey potential breeding habitat to locate nesting pairs.
- Post "Piping Plover Nesting Area Please Keep Off" signs at known breeding sites and place signs approximately 300 meters from nest site.
- Identify and coordinate group of volunteer citizen "plover wardens" to monitor human disturbance at breeding locations.
- Install predator exclosures over nests to deter potential mammalian predation.
- Band all plover young that are produced at nest sites within 7-10 days of hatching.

Solitary Sandpiper (Tringa solitaria)

Species Assessment Scores*

State rarity:	NA
State threats:	2
State population trend:	3
Global abundance:	4
Global distribution:	3
Global threats:	4
Global population trend:	3
Mean Risk Score:	3.2**
Area of importance:	3

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Emergent marsh
Central Sand Plains	Floodplain forest
North Central Forest	Emergent marsh
North Central Forest	Ephemeral pond
Northern Highland	Emergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northwest Sands	Emergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Floodplain forest
Superior Coastal Plain	Emergent marsh
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Floodplain forest
Western Prairie	Emergent marsh

- Dependent on ephemeral mudflats and shallow-flooded fields for resting and feeding sites during spring and fall migration. Some flooded areas are not afforded legal protection under current wetland regulations.
- Changes in the hydrology of large river systems through dikes, dredging, and dams have reduced the amount of shallow floodplain habitat available.
- Habitat loss and degredation from agriculture, urban development, and road-building have reduced the amount of foraging habitat available to migrating shorebirds.
- Several exotic species (e.g., zebra mussel, spiny water flea, Eurasian carp, purple loosestrife) have been introduced into shorebird habitats, but little is known about the effects of these species on migrant shorebirds.

^{**} Based on fewer than the standard 7 criteria.

- Agricultural pesticides (mainly organophosphates) are widely used throughout Central and South America, where millions of shorebirds winter. Shorebird mortality has occurred after "winter" applications of pesticides on agricultural fields.
- Industrial effluents have input toxic chemicals throughout the Great Lakes, thereby potentially affecting the invertebrate foods fueling migratory shorebirds.

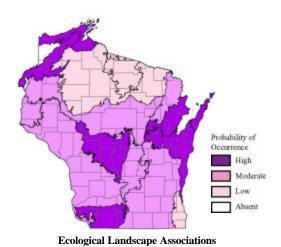
- Create or manage shorebird habitat on public lands at flowages and impoundments. Through dikes, water levels can be raised to flood these areas, and through water control structures, water levels can be manipulated to benefit shorebirds. Migration phenology and specific habitat requirements must be considered when managing for shorebirds. Detailed management guidelines for drawdowns (timing, water body size and depth, flooding/draining rate, etc.) are available in existing national and regional shorebird conservation plans (de Szalay et al. 2000, Skage et al. 1999, Helmers 1992).
- The Wisconsin Shorebird Survey (URL: http://www.uwgb.edu/birds/shorebird/index.htm) should continue as a long-term monitoring program that documents shorebird species richness and abundance and be expanded to include more managed and non-managed wetland sites.
- Evaluation of management techniques most successful in attracting spring and fall migrants should be a part of a long-term monitoring program at selected sites.
- Workshops for land managers to identify/implement strategies and techniques to manage wetlands to benefit shorebirds should occur periodically, perhaps every 5 years.
- A midwestern shorebird research and management conference featuring regional and national guest speakers/experts should occur at least once during the next decade.
- The production of materials to enhance life-long shorebird learning and emphasizing the importance of wetland ecosystems to Wisconsin's 41 shorebird species is encouraged as part of a landscape approach to integrated ecological learning and thinking.
- A variety of media outlets/devices (e.g., print, television, CD-ROM) should be used to increase public awareness and understanding of shorebirds in Wisconsin.
- Integrated governmental and non-governmental partnerships will be essential to a long-term strategy
 to promote and implement shorebird conservation in Wisconsin. A Wisconsin Shorebird Alliance
 Network (WISCONSAN) is suggested to promote the long-term conservation and management of
 Wisconsin's shorebirds.

Upland Sandpiper (*Bartramia longicauda*)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	5
Global abundance:	4
Global distribution:	3
Global threats:	4
Global population trend:	2
Mean Risk Score:	3.7
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Surrogate grasslands
Central Sand Plains	Dry prairie
Central Sand Plains	Dry-mesic prairie
Central Sand Plains	Oak barrens
Central Sand Plains	Pine barrens
Central Sand Plains	Sand prairie
Central Sand Plains	Surrogate grasslands
Northeast Sands	Bracken grassland
Northwest Sands	Pine barrens
Northwest Sands	Surrogate grasslands
Southeast Glacial Plains	Dry prairie
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Dry prairie
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Surrogate grasslands

Threats and Issues

• The Upland Sandpiper is a shortgrass specialist, dependent on large (>80 acres) patches of idle, lightly grazed, or late-mowed grasslands that are short to moderate (5-35 cm) in height. This species has been negatively affected by habitat fragmentation, urban sprawl, agricultural intensification (including loss of pasture, increase in row crop acreage, and early and frequent havesting of alfalfa hay interferring with nesting), and woody succession (including tree planting in grassland landscapes). Activities that disturb grassland habitat during the breeding season are detrimental to this species. Note that while intensive agriculture and some military and recreation activities are

- threats (e.g., extensive use of grasslands by wheeled and tracked vehicles), some are beneficial (e.g., frequent burning to suppress woody growth, conservation of large grassland blocks).
- Note that grazing is only a threat when grassland is overgrazed; light to moderate grazing is beneficial to this species.
- Upland Sandpipers are neotropical migrants that face threats from habitat conversion (agricuture is limiting habitat use) on wintering grounds (Argentina especially) and at migratory stopover habitats.
- Research is needed to determine if wind farm development poses a threat to this species.
- Agricultural pesticides may threaten this species, especially on the wintering grounds

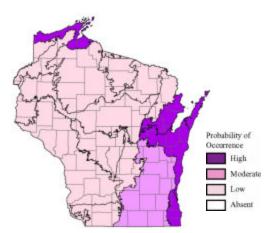
- Promote and conserve appropriate shortgrass grassland habitats on privately owned lands.
- Incorporate light to moderate grazing and late hay mowing schedules on both privately and publicly owned grasslands.
- This species benefits from 3-5 year burning regimes.
- Restoration of short-to moderate height (5-35 cm) native grasslands is beneficial. This species prefers large, open fields (>100 acres) and especially shortgrass habitats for brood-rearing and foraging.
- Need to control invasive plants such as yellow parsnip, crown vetch, leafy spurge and others on prairie and surrogate prairie grassland habitats.
- Continue agricultural set-aside programs that promote grasslands, especially programs that allow for permanent protection of shortgrass habitats and that permit light grazing. Discourage tree planting/succession in potential or known breeding habitat.
- Advocate/support planning and zoning to prevent large, open agricultural landscapes from being converted to urban or suburban development.
- Educate and raise awareness regarding the values and heritage of grassland habitats and wildlife in Wisconsin.
- Use farm demonstration projects to increase knowledge of the possibility of managing farmland for the benefit of both wildlife and agricultural production.

Whimbrel (Numenius phaeopus)

Species Assessment Scores*

State rarity:	NA
State threats:	2
State population trend:	3
Global abundance:	4
Global distribution:	3
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.3**
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Great lakes beach
Central Sand Hills	Emergent marsh
North Central Forest	Emergent marsh
Northern Highland	Emergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Great lakes beach
Northern Lake Michigan Coastal	Impoundments/Reservoirs
Northwest Sands	Emergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Impoundments/Reservoirs
Southern Lake Michigan Coastal	Emergent marsh
Southern Lake Michigan Coastal	Great lakes beach
Southern Lake Michigan Coastal	Impoundments/Reservoirs
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Great lakes beach
Western Coulee and Ridges	Emergent marsh
Western Prairie	Emergent marsh

- Dependent on ephemeral mudflats and shallow-flooded fields for resting and feeding sites during spring and fall migration. Some flooded areas are not afforded legal protection under current wetland regulations.
- Changes in the hydrology of large river systems through dikes, dredging, and dams have reduced the amount of shallow floodplain habitat available.
- Habitat loss and degredation from agriculture, urban development, and road-building have reduced the amount of foraging habitat available to migrating shorebirds.

^{**} Based on fewer than the standard 7 criteria.

- Several exotic species (e.g., zebra mussel, spiny water flea, Eurasian carp, purple loosestrife) have been introduced into shorebird habitats, but little is known about the effects of these species on migrant shorebirds.
- Agricultural pesticides (mainly organophosphates) are widely used throughout Central and South America, where millions of shorebirds winter. Shorebird mortality has occurred after "winter" applications of pestic ides on agricultural fields.
- Industrial effluents have input toxic chemicals throughout the Great Lakes, thereby potentially affecting the invertebrate foods fueling migratory shorebirds

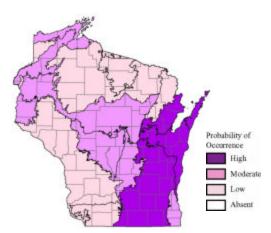
- Create or manage shorebird habitat on public lands at flowages and impoundments. Through dikes, water levels can be raised to flood these areas, and through water control structures, water levels can be manipulated to benefit shorebirds. Migration phenology and specific habitat requirements must be considered when managing for shorebirds. Detailed management guidelines for drawdowns (timing, water body size and depth, flooding/draining rate, etc.) are available in existing national and regional shorebird conservation plans (de Szalay et al. 2000, Skage et al. 1999, Helmers 1992).
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 to promote and implement shorebird conservation in Wisconsin. A Wisconsin Shorebird Alliance
 Network (WISCONSAN) is suggested to promote the long-term conservation and management of
 Wisconsin's shorebirds.

Hudsonian Godwit (Limosa haemastica)

Species Assessment Scores*

State rarity:	NA
State threats:	3
State population trend:	3
Global abundance:	4
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.3**
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Great lakes beach
Central Sand Hills	Emergent marsh
Central Sand Plains	Emergent marsh
Forest Transition	Emergent marsh
North Central Forest	Emergent marsh
Northern Highland	Emergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Great lakes beach
Northwest Sands	Emergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Impoundments/Reservoirs
Southern Lake Michigan Coastal	Emergent marsh
Superior Coastal Plain	Emergent marsh
Western Coulee and Ridges	Emergent marsh
Western Prairie	Emergent marsh

- Dependent on ephemeral mudflats and shallow-flooded fields for resting and feeding sites during spring and fall migration. Some flooded areas are not afforded legal protection under current wetland regulations.
- Changes in the hydrology of large river systems through dikes, dredging, and dams have reduced the amount of shallow floodplain habitat available.
- Habitat loss and degredation from agriculture, urban development, and road-building have reduced the amount of foraging habitat available to migrating shorebirds.

^{**} Based on fewer than the standard 7 criteria.

- Several exotic species (e.g., zebra mussel, spiny water flea, Eurasian carp, purple loosestrife) have been introduced into shorebird habitats, but little is known about the effects of these species on migrant shorebirds.
- Agricultural pesticides (mainly organophosphates) are widely used throughout Central and South America, where millions of shorebirds winter. Shorebird mortality has occurred after "winter" applications of pesticides on agricultural fields.
- Industrial effluents have input toxic chemicals throughout the Great Lakes, thereby potentially affecting the invertebrate foods fueling migratory shorebirds

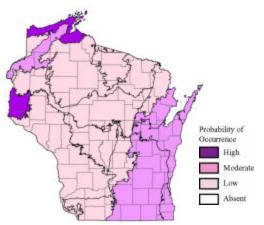
- Create or manage shorebird habitat on public lands at flowages and impoundments. Through dikes, water levels can be raised to flood these areas, and through water control structures, water levels can be manipulated to benefit shorebirds. Migration phenology and specific habitat requirements must be considered when managing for shorebirds. Detailed management guidelines for drawdowns (timing, water body size and depth, flooding/draining rate, etc.) are available in existing national and regional shorebird conservation plans (de Szalay *et al.* 2000, Skage *et al.* 1999, Helmers 1992).
- The Wisconsin Shorebird Survey (URL: http://www.uwgb.edu/birds/shorebird/index.htm) should continue as a long-term monitoring program that documents shorebird species richness and abundance and be expanded to include more managed and non-managed wetland sites.
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Marbled Godwit (Limosa fedoa)

Species Assessment Scores*

State rarity:	NA
State threats:	2
State population trend:	3
Global abundance:	3
Global distribution:	3
Global threats:	4
Global population trend:	4
Mean Risk Score:	3.2**
Area of importance:	1

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Sand Hills	Emergent marsh
North Central Forest	Emergent marsh
Northern Highland	Emergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northwest Sands	Emergent marsh
Northwest Sands	Surrogate grasslands
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southeast Glacial Plains	Wet-mesic prairie
Southern Lake Michigan Coastal	Emergent marsh
Southern Lake Michigan Coastal	Wet-mesic prairie
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Great lakes beach
Superior Coastal Plain	Submergent marsh
Western Coulee and Ridges	Emergent marsh
Western Prairie	Dry-mesic prairie
Western Prairie	Emergent marsh
Western Prairie	Mesic prairie
Western Prairie	Surrogate grasslands

Threats and Issues

• Dependent on ephemeral mudflats and shallow-flooded fields for resting and feeding sites during spring and fall migration. Some flooded areas are not afforded legal protection under current wetland regulations.

^{**} Based on fewer than the standard 7 criteria.

- Changes in the hydrology of large river systems through dikes, dredging, and dams have reduced the amount of shallow floodplain habitat available.
- Habitat loss and degredation from agriculture, urban development, and road-building have reduced the amount of foraging habitat available to migrating shorebirds.
- Several exotic species (e.g., zebra mussel, spiny water flea, Eurasian carp, purple loosestrife) have been introduced into shorebird habitats, but little is known about the effects of these species on migrant shorebirds.
- Agricultural pesticides (mainly organophosphates) are widely used throughout Central and South America, where millions of shorebirds winter. Shorebird mortality has occurred after "winter" applications of pesticides on agricultural fields.
- Industrial effluents have input toxic chemicals throughout the Great Lakes, thereby potentially affecting the invertebrate foods fueling migratory shorebirds

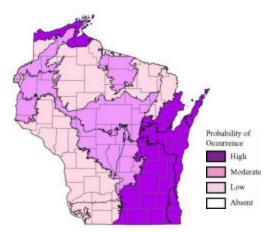
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Dunlin (Calidris alpina)

Species Assessment Scores*

State rarity:	NA
State threats:	3
State population trend:	3
Global abundance:	2
Global distribution:	3
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.2**
Area of importance:	3

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Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Great lakes beach
Central Lake Michigan Coastal	Warmwater rivers
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Great lakes beach
Northern Lake Michigan Coastal	Warmwater rivers
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Warmwater rivers
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Great lakes beach

- Dependent on ephemeral mudflats and shallow-flooded fields for resting and feeding sites during spring and fall migration. Some flooded areas are not afforded legal protection under current wetland regulations.
- Changes in the hydrology of large river systems through dikes, dredging, and dams have reduced the amount of shallow floodplain habitat available.
- Habitat loss and degredation from agriculture, urban development, and road-building have reduced the amount of foraging habitat available to migrating shorebirds.
- Several exotic species (e.g., zebra mussel, spiny water flea, Eurasian carp, purple loosestrife) have been introduced into shorebird habitats, but little is known about the effects of these species on migrant shorebirds.

^{**} Based on fewer than the standard 7 criteria.

- Agricultural pesticides (mainly organophosphates) are widely used throughout Central and South America, where millions of shorebirds winter. Shorebird mortality has occurred after "winter" applications of pesticides on agricultural fields.
- Industrial effluents have input toxic chemicals throughout the Great Lakes, thereby potentially affecting the invertebrate foods fueling migratory shorebirds

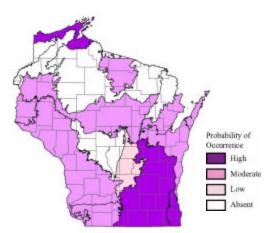
- Create or manage shorebird habitat on public lands at flowages and impoundments. Through dikes, water levels can be raised to flood these areas, and through water control structures, water levels can be manipulated to benefit shorebirds. Migration phenology and specific habitat requirements must be considered when managing for shorebirds. Detailed management guidelines for drawdowns (timing, water body size and depth, flooding/draining rate, etc.) are available in existing national and regional shorebird conservation plans (de Szalay et al. 2000, Skage et al. 1999, Helmers 1992).
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Buff-breasted Sandpiper (*Tryngites subruficollis*)

Species Assessment Scores*

State rarity:	NA
State threats:	3
State population trend:	3
Global abundance:	5
Global distribution:	4
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.7**
Area of importance:	2

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Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Northern Highland	Emergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Surrogate grasslands
Southeast Glacial Plains	Wet prairie
Southeast Glacial Plains	Wet-mesic prairie
Southern Lake Michigan Coastal	Emergent marsh
Southern Lake Michigan Coastal	Surrogate grasslands
Southern Lake Michigan Coastal	Wet prairie
Southern Lake Michigan Coastal	Wet-mesic prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Surrogate grasslands
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Great lakes beach
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Emergent marsh
Western Prairie	Surrogate grasslands

- Dependent on ephemeral mudflats and shallow-flooded fields for resting and feeding sites during spring and fall migration. Some flooded areas are not afforded legal protection under current wetland regulations.
- Changes in the hydrology of large river systems through dikes, dredging, and dams have reduced the amount of shallow floodplain habitat available.

^{**} Based on fewer than the standard 7 criteria.

- Habitat loss and degredation from agriculture, urban development, and road-building have reduced the amount of foraging habitat available to migrating shorebirds.
- Several exotic species (e.g., zebra mussel, spiny water flea, Eurasian carp, purple loosestrife) have been introduced into shorebird habitats, but little is known about the effects of these species on migrant shorebirds.
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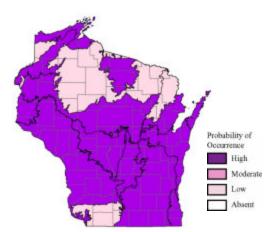
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Short-billed Dowitcher (*Limnodromus griseus*)

Species Assessment Scores*

State rarity:	NA
State threats:	3
State population trend:	3
Global abundance:	2
Global distribution:	3
Global threats:	4
Global population trend:	5
Mean Risk Score:	3.3**
Area of importance:	3

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Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Sand Hills	Emergent marsh
Central Sand Hills	Impoundments/Reservoirs
Central Sand Plains	Emergent marsh
Central Sand Plains	Impoundments/Reservoirs
Forest Transition	Emergent marsh
Forest Transition	Impoundments/Reservoirs
Northern Highland	Emergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northwest Sands	Emergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Impoundments/Reservoirs
Southern Lake Michigan Coastal	Emergent marsh
Superior Coastal Plain	Emergent marsh
Western Coulee and Ridges	Emergent marsh
Western Prairie	Emergent marsh

- Dependent on ephemeral mudflats and shallow-flooded fields for resting and feeding sites during spring and fall migration. Some flooded areas are not afforded legal protection under current wetland regulations.
- Changes in the hydrology of large river systems through dikes, dredging, and dams have reduced the amount of shallow floodplain habitat available.
- Habitat loss and degredation from agriculture, urban development, and road-building have reduced the amount of foraging habitat available to migrating shorebirds.

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- Several exotic species (e.g., zebra mussel, spiny water flea, Eurasian carp, purple loosestrife) have been introduced into shorebird habitats, but little is known about the effects of these species on migrant shorebirds.
- Agricultural pesticides (mainly organophosphates) are widely used throughout Central and South America, where millions of shorebirds winter. Shorebird mortality has occurred after "winter" applications of pesticides on agricultural fields.
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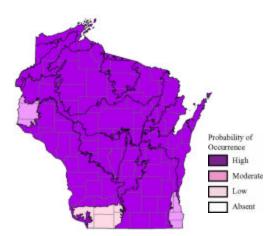
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American Woodcock (Scolopax minor)

Species Assessment Scores*

State rarity:	2
State threats:	3
State population trend:	4
Global abundance:	3
Global distribution:	3
Global threats:	4
Global population trend:	5
Mean Risk Score:	3.4
Area of importance:	5

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<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Shrub-carr
Central Sand Hills	Alder thicket
Central Sand Hills	Calcareous fen
Central Sand Hills	Shrub-carr
Central Sand Plains	Alder thicket
Central Sand Plains	Shrub-carr
Forest Transition	Alder thicket
Forest Transition	Northern mesic forest
Forest Transition	Shrub-carr
North Central Forest	Alder thicket
North Central Forest	Hardwood swamp
North Central Forest	Northern mesic forest
North Central Forest	Shrub-carr
Northeast Sands	Alder thicket
Northern Highland	Alder thicket
Northern Highland	Shrub-carr
Northern Lake Michigan Coastal	Northern mesic forest
Northern Lake Michigan Coastal	Shrub-carr
Northwest Lowlands	Alder thicket
Northwest Sands	Alder thicket
Southeast Glacial Plains	Bog relict
Southeast Glacial Plains	Calcareous fen
Southeast Glacial Plains	Hardwood swamp
Southeast Glacial Plains	Shrub-carr
Southeast Glacial Plains	Southern tamarack swamp (rich)
Superior Coastal Plain	Alder thicket
Superior Coastal Plain	Shrub-carr
Western Coulee and Ridges	Alder thicket
Western Coulee and Ridges	Shrub-carr

Threats and Issues

- A decrease in the extent of young forest habitats and the isolation of these habitats may be limiting
 woodcock recruitment (Dessecker and McAuley 2001). Young forest habitats have decreased in
 Wisconsin from a peak in extent that occurred when early successional forest species recolonized
 lands left open after the Cutover and associated fires (Gregg 1984 and Roth 2001). Acreages appear
 to have stabilized in recent inventory periods.
- A ground-nesting species often preferring forest edges, woodcock are susceptible to high nest mortality due to meso-predators in areas experiencing forest fragmentation, human development, and agriculture.
- Riparian area guidelines that preclude the removal of substantial overstory vegetation can limit the development of early successional habitat (Dessecker and McAuley 2001).
- Winter mortality in the southern U.S. due to hunting and avian predators is likely a significant source of adult mortality outside of Wisconsin (Pace 2000, Krementz and Berdeen 1997, Krementz *et al.* 1994).
- Elevated lead levels have been documented on breeding grounds in Wisconsin (Strom *et al.* 2004) and Canada (Scheuhammer *et al.* 1999).

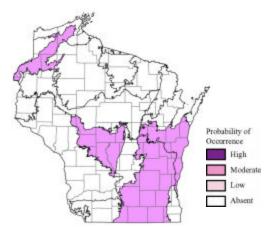
- Specific woodcock management techniques, including clear cutting, burning, mowing, and herbicide applications, where appropriate, can be used to create singing grounds and roosting areas and rejuvenate feeding grounds (Gregg 1984).
- Timber harvest that removes substantial overstory trees along riparian areas may be warrented in some areas. Water quality concerns can be addressed by applying voluntary Forestry Best Management Practices for water quality.
- Reduce human development in forested landscapes and near riparian areas, especially where alder is present.
- Educate the public on the importance of maintaining young forest habitats in some areas for woodcock and other wildlife species.
- Research the impacts that meso-predators may have on populations.
- Monitor lead levels in woodcock and identify source of lead.

Wilson's Phalarope (*Phalaropus tricolor*)

Species Assessment Scores*

State rarity:	4
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	5
Global threats:	4
Global population trend:	4
Mean Risk Score:	3.7
Area of importance:	2

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Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Northern sedge meadow
Central Lake Michigan Coastal	Submergent marsh
Central Sand Plains	Emergent marsh
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Submergent marsh
Northwest Sands	Emergent marsh
Northwest Sands	Northern sedge meadow
Northwest Sands	Submergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Northern sedge meadow
Southeast Glacial Plains	Southern sedge meadow
Southeast Glacial Plains	Submergent marsh

Threats and Issues

- Protection of large sedge meadows greater than 100 acres in size is of paramount importance.
 Drainage/alteration/contamination of large sedge meadows or grass-dominated meadows is a major concern. This species prefers sedge meadows interspersed with shallow open water (about 15% cover of water).
- Need to identify threats during migration and on wintering grounds.

- Track all breeding season occurrences, identify critical breeding habitat, and describe breeding microhabitat site characteristics.
- Determine statewide population and monitor changes in population over time.
- Determine protection and acquisition priorities of critical breeding habitat.

- Include this species in wetland landscape-scale research and planning projects.
- Develop management plan for this and other sedge meadow-dependent species.

Caspian Tern (Sterna caspia)

Species Assessment Scores*

State rarity:	5
State threats:	3
State population trend:	3
Global abundance:	4
Global distribution:	2
Global threats:	3
Global population trend:	1
Mean Risk Score:	3
Area of importance:	2

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Great lakes beach
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Submergent marsh
Northern Lake Michigan Coastal	Great lakes beach
Northern Lake Michigan Coastal	Impoundments/Reservoirs
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Submergent marsh
Southern Lake Michigan Coastal	Great lakes beach
Southern Lake Michigan Coastal	Lake Michigan
Superior Coastal Plain	Great lakes beach
Superior Coastal Plain	Lake Superior
Superior Coastal Plain	Submergent marsh

- Caspian Terns require sparsely vegetated substrates, typically on islands associated with large inland lakes and the Great Lakes. Vegetative succession reduces or eliminates breeding habitat availability.
- Habitat loss and competition for nest sites with Ring-billed Gulls and Herring Gulls
- Mammalian predation of eggs or young especially mink (and to a lesser extent avian predation, especially migrant Ruddy Turnstones that predate eggs)
- Prolonged inclement weather and associated high wave action
- Coastal development may impact tern colony sites by reducing or eliminating potential breeding habitat. Associated with development may be a greater threat of human disturbance.
- Since the early 1970s, organochlorine and other chemical contaminants, such as PCBs and DDE (DDE concentrations exceeding 4 ppm in eggs) have affected Common Tern eggshell thickness and structure, caused various eye, bill, and feet deformities, and contributed to aberrant behaviors of

- breeding adults. It is likely that Caspian Terns have been affected by chemical contaminents in similar ways.
- Caspian Terns formerly nested on sandy peninsulas or islands accessible by recreating humans. These sites have been all but abandoned by breeding terns. Nesting Caspian Terns are now largely restricted to dredge-spoil islands, a managed former pier remnant, or remote gravel islands.

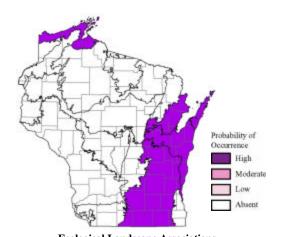
- Long-term conservation and management of dredge spoil sites and other island sites that can be all or
 partially managed for nesting Caspian Terns is recommended. Managing inland and coastal, sparsely
 vegetated, island sites for both Caspian and Common Terns as part of an ecosystem approach to
 species restoration and recovery is recommedated. The use of tern decoys and sound systems may
 help attract both species to potental breeding habitat.
- The long-term use, and planning for, dredge spoil sites should include a component for tern management.
- Regulations that limit/monitor/prevent the presence of organochlorine contaminants as part of an overall strategy to monitor contaminat loads in coastal ecosystems are recommended.
- Research, training, and communication that identifies Caspian and Common terns as integral components of coastal ecosystems will aid conservation and management.
- Public education programs and presentations of long-term tern monitoring efforts will reinforce the importance of both species to coastal environments, particularly along the Great Lakes.
- Partnerships between state and federal agencies and private organizations dedicated to the conservation of coastal ecosytems will benefit the long-term management of both Caspian and Common Terns.

Common Tern (Sterna hirundo)

Species Assessment Scores*

State rarity:	5
State threats:	2
State population trend:	4
Global abundance:	3
Global distribution:	1
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.3
Area of importance:	3

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Great lakes beach
Central Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Great lakes beach
Northern Lake Michigan Coastal	Lake Michigan
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Great lakes beach
Superior Coastal Plain	Lake Superior
Superior Coastal Plain	Submergent marsh

Threats and Issues

- Common Terns require sparsely vegetated substrates, typically on islands associated with large inland lakes and the Great Lakes. Vegetative succession reduces or eliminates breeding habitat availability.
- Habitat loss and competition for nest sites with Ring-billed Gulls and Herring Gulls
- Mammalian predation of eggs or young especially mink (and to a lesser extent avian predation, especially migrant Ruddy Turnstones that predate eggs)
- Prolonged inclement weather and associated high wave action
- Coastal development may impact tern colony sites by reducing or eliminating potential breeding habitat. Associated with development may be a greater threat of human disturbance.
- Since the early 1970s, organochlorine and other chemical contaminants, such as PCBs and DDE (DDE concentrations exceeding 4 ppm in eggs) have affected Common Tern eggshell thickness and

- structure, caused various eye, bill, and feet deformities, and contributed to aberrant beahviors of breeding adults.
- Common Terns formerly nested on sandy peninsulas or islands accessible by recreating humans.
 These sites have been all but abandoned by breeding terns. Nesting Common and Caspian Terns are now largely restricted to dredge-spoil islands, a managed former pier remnant, or remote gravel islands.

- Long-term conservation and management of dredge spoil sites and other island sites that can be all or partially managed for nesting Common and Caspian Terns is recommended.
- Managing inland and coastal, sparsely vegetated, island sites for Common and Caspian Terns as part
 of an ecosystem approach to species restoration and recovery is recommended. The use of tern
 decoys and sound systems may help attract both species to potental breeding habitat.
- The long-term use, and planning for, dredge spoil sites should include a component for tern management.
- Regulations that limit/monitor/prevent the presence of organochlorine contaminants as part of an overall strategy to monitor contaminat loads in coastal ecosystems are recommended.
- Research, training, and communication that identifies both Common and Caspian Terns as integral components of coastal ecosystems will aid conservation and management.
- Public education programs and presentations of long-term tern monitoring efforts will reinforce the importance of both species to coastal environments, particularly along the Great Lakes.
- Partnerships between state and federal agencies and private organizations dedicated to the conservation of coastal ecosytems will benefit the long-term management of both Common and Caspian Terns.

Forster's Tern (Sterna forsteri)

Species Assessment Scores*

State rarity:	4
State threats:	3
State population trend:	3
Global abundance:	4
Global distribution:	2
Global threats:	3
Global population trend:	2
Mean Risk Score:	3
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Lands cape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Lake Michigan Coastal	Lake Michigan
Central Lake Michigan Coastal	Submergent marsh
Central Sand Hills	Emergent marsh
Central Sand Hills	Impoundments/Reservoirs
Central Sand Hills	Inland lakes
Central Sand Hills	Southern sedge meadow
Central Sand Hills	Submergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Impoundments/Reservoirs
Northern Lake Michigan Coastal	Lake Michigan
Northern Lake Michigan Coastal	Submergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southeast Glacial Plains	Southern sedge meadow
Southeast Glacial Plains	Submergent marsh
Southern Lake Michigan Coastal	Emergent marsh
Southern Lake Michigan Coastal	Impoundments/Reservoirs
Southern Lake Michigan Coastal	Lake Michigan
Western Coulee and Ridges	Emergent marsh

Threats and Issues

- Forster's Terns nest in emergent marshes associated with large lake/wetland complexes. Habitat loss and degradation, and habitat isolation and fragmentation, due to drainage, filling, and lake shore development are the principal threats to this species.
- In some cases, nesting habitat has been lost due to artificially high water levels maintained by manmade dams (e.g., Lake Koshkonong, Rush Lake, Lake Puckaway, Pewaukee Lake, Winnebago Pool

- Lakes), or by natural, extended periods of high water (e.g., Green Bay in the mid-1970's and mid-1980's), which compromised or eliminated marsh emergent vegetation.
- Purple loosestrife may dominate native vegetation and form stands too dense for nesting Forster's Terns. Eurasian carp activity is another factor involved in the disappearance of suitable nesting habitat.
- In the mid-1980s, chemical contamination (e.g., dioxin, PCBs) from the industrialized lower Fox River contributed to longer incubation periods, lower hatching success, lower chick and embryo weights, and more developmental anomalies.
- Human disturbance, particularly prolonged disturbance, is a potential threat because of the possibility of exposing eggs or chicks to adverse weather that could result in egg/chick mortality. Weather and predation are the main causes of egg loss and chick mortality for Wisconsin Forster's Terns.
- Great Horned Owl predation has been identified as a mortality factor for terns.

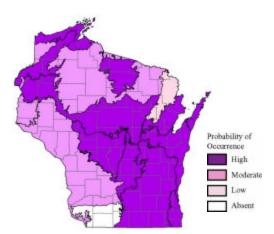
- Initiation of major lake or wetland ecosystem renovation projects where breeding habitat is declining is the most important management action. The highest priority Wisconsin sites in descending order are: 1. Rush Lake; 2. Winnebago Pool Lakes; (including Lake Poygan) 3. Green Bay west shore; 4. Horicon Marsh Wildlife Area; and 5. Big Muskego Lake.
- The use of artificial nesting platofrms is appropriate to maintain populations where feasible.
- At managed state properties, it will be important to maintain long-term productivity of marshes by mimicking natural hydrologic regimes and adapting management techniques to localized conditions. Periodic drawdowns will benefit this species.
- Control of carp and purple loosestrife is an ongoing concern. Removal of loosestrife by uprooting
 plants, water-level manipulation, biological control (weevils, etc.), mowing, burning, or herbicide
 applications is recommended.
- At some sites, removal of Great Horned Owls (or mink) known to kill chicks may be essential to maintain or preserve colony productivity.
- During the nesting season, water levels must remain stable. Water levels that encourage the stability of emergent patches must be a part of comprehensive management plans.
- Continued monitoring of extant colonies to document long-term population trends is needed so that listing and delisting decisions can proceed.
- Training on when to monitor colonies and what data to collect will be needed as more individuals become involved with data collection.
- At a broader level, efforts to raise awareness about tern ecology in lake and wetland ecosystems are an ongoing intradepartmental and public concern.
- Both an institutional framework and partnership alliances that adopt an ecosystem approach to wetland conservation will benefit this species.
- Partnerships between the WDNR and organizations dedicated to wetland conservation are essential to the long-term management and conservation of wetland complexes that provide breeding habitat for this species.

Black Tern (Chlidonias niger)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	5
Global abundance:	4
Global distribution:	2
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.6
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

•	· ·
Ecological Landscape	Community
Central Lake Michigan Coastal	Emergent marsh
Central Sand Hills	Emergent marsh
Central Sand Hills	Impoundments/Reservoirs
Central Sand Hills	Inland lakes
Central Sand Plains	Emergent marsh
Central Sand Plains	Impoundments/Reservoirs
Central Sand Plains	Northern sedge meadow
Forest Transition	Emergent marsh
Forest Transition	Impoundments/Reservoirs
North Central Forest	Emergent marsh
Northern Highland	Emergent marsh
Northern Highland	Emergent marsh - wild rice
Northern Highland	Inland lakes
Northern Highland	Northern sedge meadow
Northern Highland	Submergent marsh
Northern Lake Michigan Coastal	Emergent marsh
Northern Lake Michigan Coastal	Northern sedge meadow
Northwest Sands	Emergent marsh
Northwest Sands	Emergent marsh - wild rice
Northwest Sands	Inland lakes
Northwest Sands	Northern sedge meadow
Northwest Sands	Submergent marsh
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Impoundments/Reservoirs
Southeast Glacial Plains	Inland lakes
Southern Lake Michigan Coastal	Emergent marsh
Superior Coastal Plain	Emergent marsh
Superior Coastal Plain	Emergent marsh - wild rice
Superior Coastal Plain	Submergent marsh
Western Coulee and Ridges	Emergent marsh
Western Prairie	Emergent marsh

Threats and Issues

- Black Terns nest in emergent marshes associated with large lake/wetland complexes. Habitat loss and degradation, and habitat isolation and fragmentation, due to drainage, filling, and lake shore development are the principal threats to black terns.
- In some cases, nesting habitat has been lost due to artificially high water levels maintained by manmade dams, or by natural, extended periods of high water which compromised or eliminated marsh emergent vegetation.
- Purple loosestrife may dominate native vegetation and form stands too dense for nesting black terns.
 Eurasian carp activity is another factor involved in the disappearance of suitable nesting habitat. An increase in feral Mute Swans at a Michigan site may have caused a sharp decline in breeding Black Terns between 1980 and 1988.
- During the 1980s, Black Tern eggs from Green Bay had higher PCB and pesticide residue levels than levels in Black Tern eggs from the Mississippi River and interior colonies.
- Exposure to organohalogen compounds may be a concern for this species.
- Human disturbance, particularly prolonged disturbance, is a potential threat because of the possibility of exposing eggs or chicks to adverse weather that could result in egg/chick mortality.
- Great Horned Owl predation has been identified as a mortality factor for terns.

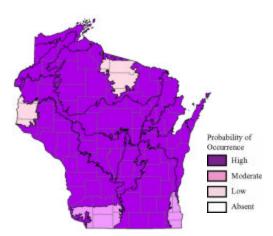
- Initiation of major lake or wetland ecosystem renovation projects where breeding habitat is declining is the most important management action. The highest priority Wisconsin sites in descending order are: 1. Rush Lake; 2. Green Bay west shore; 3. Winnebago Pool Lakes (including Lake Poygan); 4. Horicon Marsh Wildlife Area; and 5. Big Muskego Lake.
- At managed state properties, it will be important to maintain long-term productivity of marshes by mimicking natural hydrologic regimes and adapting management techniques to localized conditions.
 Periodic drawdowns will benefit Black Terns and other species.
- Control of carp and purple loosestrife is an ongoing concern.
- At some sites, removal of Great Horned Owls (or mink) known to kill chicks may be essential to maintain or preserve colony productivity.
- Use of artificial nesting platforms may benefit Black Terns and should be evaulated on a site-by-ste basis.
- Black Terns may benefit from creation or restoration of marshes >20 ha or marshes >5 and <20 ha within a wetland complex. In large marshes, habitat patches >20 ha may be appropriate, with patches having a 50:50 interspersion of vegetation and water.
- During the nesting season, water levels must remain stable. Water levels that encourage the stability of emergent patches must be a part of comprehensive management plans.
- Continued monitoring of extant colonies to document long-term population trends is needed so that listing and delisting decisions can proceed.
- Training on when to monitor colonies and what data to collect will be needed as more individuals become involved with data collection.
- Both an institutional framework and partnership alliances that adopt an ecosystem approach to wetland conservation will benefit Black Terns.
- Partnerships between the WDNR and organizations dedicated to wetland conservation are essential to
 the long-term management and conservation of wetland complexes that provide breeding habitat for
 this species.

Black-billed Cuckoo (Coccyzus erythropthalmus)

Species Assessment Scores*

State rarity:	2
State threats:	3
State population trend:	5
Global abundance:	3
Global distribution:	2
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.1
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Great Lakes Ridge and Swale
Central Lake Michigan Coastal	Shrub-carr
Central Sand Hills	Alder thicket
Central Sand Hills	Shrub-carr
Central Sand Plains	Alder thicket
Central Sand Plains	Floodplain forest
Central Sand Plains	Oak barrens
Central Sand Plains	Pine barrens
Central Sand Plains	Shrub-carr
Forest Transition	Alder thicket
Forest Transition	Northern mesic forest
Forest Transition	Shrub-carr
North Central Forest	Alder thicket
North Central Forest	Northern mesic forest
North Central Forest	Shrub-carr
Northeast Sands	Alder thicket
Northeast Sands	Pine barrens
Northern Lake Michigan Coastal	Great Lakes Ridge and Swale
Northern Lake Michigan Coastal	Northern mesic forest
Northern Lake Michigan Coastal	Shrub-carr
Northwest Lowlands	Alder thicket
Northwest Sands	Alder thicket
Northwest Sands	Pine barrens
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Shrub-carr
Southeast Glacial Plains	Southern tamarack swamp (rich)
Superior Coastal Plain	Alder thicket
Superior Coastal Plain	Shrub-carr
Western Coulee and Ridges	Alder thicket
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Oak barrens
Western Coulee and Ridges	Shrub-carr

Threats and Issues

- Loss of early seral deciduous habitat due to succession or to rural home development.
- Black-billed Cuckoos can specialize in areas with forest tent caterpillar outbreaks and may be impacted by local suppression of those outbreaks, both through loss of food source and pesticide application.
- May be sensitive to habitat alteration of shrubland communities and forests infested with invasive plants.

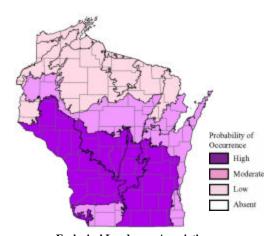
- Conservation of large blocks of "working" forested lands.
- Better research on habitat use by this species and the impact of succession, caterpillar outbreaks, pesticide use, and the effects of invasive plants on habitat quality. Since 70% of Wisconsin forests are privately owned, research is needed to study whether smaller private holdings can provide habitat if managed as early seral deciduous types.

Yellow-billed Cuckoo (Coccyzus americanus)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	5
Global abundance:	2
Global distribution:	2
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.1
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape AssociationsPlease note that this is not a range map

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Floodplain forest
Central Sand Hills	Shrub-carr
Central Sand Plains	Floodplain forest
Central Sand Plains	Shrub-carr
Central Sand Plains	Southern dry-mesic forest
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Shrub-carr
Southeast Glacial Plains	Southern dry-mesic forest
Southeast Glacial Plains	Southern hardwood swamp
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Shrub-carr
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest

Threats and Issues

- Loss and fragmentation of southern forests, especially in riparian areas.
- Control of caterpillars and other insects might also be of issue with this species since it appears to track outbreaks of tent caterpillars.
- Threats during migration from tall, lighted structures and tropical deforestation are threats.

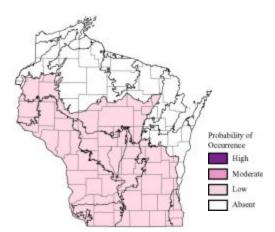
- Conserve and restore floodplain forests where appropriate.
- Research is needed on population fluctuations and the potential links to caterpillar abundance, including gypsy moth.
- Provide a network of stopover sites, especially in riparian systems to benefit this and many other Neotropical migrants.

Barn Owl (Tyto alba)

Species Assessment Scores*

State rarity:	5
State threats:	5
State population trend:	3
Global abundance:	3
Global distribution:	1
Global threats:	2
Global population trend:	3
Mean Risk Score:	3.1
Area of importance:	1

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Surrogate grasslands
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Mesic prairie
Western Prairie	Surrogate grasslands

Thre ats and Issues

- Elimination of hedgerows and replacement of older, concrete silos with modern silos and outbuildings in agricultural landscapes.
- Succession of grassland habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth.
- Drainage or flooding of wet meadows. Loss of grassland habitat through development and the intensification of agriculture, including early and frequent harvest of hay, and conversion of grassland to row crops or tree plantations.
- Pesticides, especially anticoagulant rodenticides, may present problems for this species.
- This species is at the northern edge of its range and may be limited by winter severity, including snow
 depth. If this is the primary factor limiting the Wisconsin population of Barn Owls, then
 improvements in grassland habitat availability during the breeding season may not benefit this
 species.

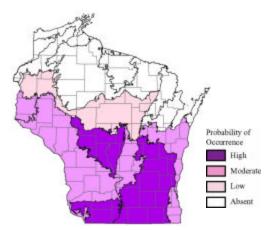
- As part of a larger strategy to conserve grassland birds and grassland habitats, explore traditional options (easements, enrollment in Conservation Reserve Program) with landowners.
- Restoration/maintenance of large patches of open grasslands, wet meadows, and compatible
 agricultural uses should be part of a landscape approach benefitting grassland birds, including the
 Barn Owl.
- Meetings with local landowners and presentations at community functions will enhance education opportunities about this species and other grassland birds.
- Nest boxes have been proven effective in other states, but not in Wisconsin to date.
- Conduct research to determine the relative effects of winter severity and other threats to the Barn Owl population.
- Conduct research to determine if wind farm development is a threat to population stability.

Short-eared Owl (Asio flammeus)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	1
Global threats:	4
Global population trend:	5
Mean Risk Score:	3.6
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Wet-mesic prairie
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Shrub-carr
Central Sand Plains	Surrogate grasslands
Southeast Glacial Plains	Dry prairie
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Shrub-carr
Southeast Glacial Plains	Southern sedge meadow
Southeast Glacial Plains	Surrogate grasslands
Southeast Glacial Plains	Wet-mesic prairie
Southern Lake Michigan Coastal	Wet-mesic prairie
Southwest Savanna	Dry prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Surrogate grasslands
Southwest Savanna	Wet-mesic prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Mesic prairie
Western Prairie	Surrogate grasslands

Threats and Issues

- Succession of preferred habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth.
- Flooding of wet meadows.
- The effects of wind farm development on populations of this species are unknown.

- Intensification of agriculture, including early and frequent harvest of hay and conversion of grassland and wet meadows to row crops or tree plantations.
- Loss of grassland habitat due to development. Habitat fragmentation is an issue for this area-sensitive species.
- Disturbance of grassland cover during the breeding or wintering season
- Overgrazing reduces habitat quality for this species.
- Agricultural pesticides may pose a threat.
- Habitat-related loss of small mammal populations as a winter food source is a threat.

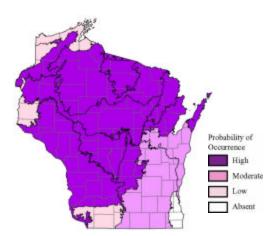
- Maintain habitat in large blocks, preferably 250 acres and greater.
- Conduct research to determine if wind farm development harms this species.
- Continue agricultural set-aside programs, especially those that allow for permanent protection of preferred habitats.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Partnerships are key for conserving this species in working agricultural landscapes.
- Maintain healthy populations of grassland small mammals as a prey base via maintenance of extensive open and idle grasslands.

Whip-poor-will (Caprimulgus vociferus)

Species Assessment Scores*

State rarity:	2
State threats:	3
State population trend:	4
Global abundance:	3
Global distribution:	3
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.1
Area of importance:	3

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Central sands pine-oak forest
Central Sand Hills	Southern dry forest
Central Sand Hills	Southern dry-mesic forest
Central Sand Plains	Central sands pine-oak forest
Central Sand Plains	Oak barrens
Central Sand Plains	Pine barrens
Central Sand Plains	Southern dry forest
Central Sand Plains	Southern dry-mesic forest
North Central Forest	Bedrock glade
Northeast Sands	Northern dry forest
Northeast Sands	Northern dry -mesic forest
Northeast Sands	Pine barrens
Northern Highland	Northern dry -mesic forest
Northwest Sands	Northern dry forest
Northwest Sands	Northern dry -mesic forest
Northwest Sands	Pine barrens
Southeast Glacial Plains	Oak woodland
Southeast Glacial Plains	Southern dry forest
Southeast Glacial Plains	Southern dry-mesic forest
Western Coulee and Ridges	Bedrock glade
Western Coulee and Ridges	Oak barrens
Western Coulee and Ridges	Oak woodland
Western Coulee and Ridges	Pine relict
Western Coulee and Ridges	Southern dry forest
Western Coulee and Ridges	Southern dry-mesic forest

Threats and Issues

• Very little is known about population trend, distribution, habitat selection and limiting factors either in Wisconsin or in the tropical wintering grounds.

- As a ground nester, may be sensitive to predation from expanding meso-predator complexes in many areas of Wisconsin.
- Tropical deforestation may be impacting populations.
- Dependent on large moths for food. Some have speculated that agricultural chemicals may be limiting moth populations.

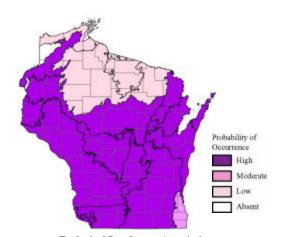
- Demographic research to identify potential limiting factors.
- Long-term population trend survey in the Upper Midwest.
- Conserve large blocks of oak woodlands and dry forest.

Red-headed Woodpecker (Melanerpes erythrocephalus)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	5
Global abundance:	3
Global distribution:	2
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.6
Area of importance:	4

^{*} Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations Please note that this is not a range map. Shading

does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Central sands pine-oak forest
Central Sand Hills	Southern dry forest
Central Sand Plains	Central sands pine-oak forest
Central Sand Plains	Floodplain forest
Central Sand Plains	Oak barrens
Central Sand Plains	Southern dry-mesic forest
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Oak opening
Southeast Glacial Plains	Oak woodland
Southeast Glacial Plains	Southern dry forest
Southeast Glacial Plains	Southern dry-mesic forest
Southwest Savanna	Oak opening
Southwest Savanna	Oak woodland
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Oak barrens
Western Coulee and Ridges	Oak opening
Western Coulee and Ridges	Oak woodland
Western Coulee and Ridges	Southern dry forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Prairie	Oak opening
Western Prairie	Oak woodland

Threats and Issues

Red-headed Woodpeckers do best in savanna-like woodlands or open oak woodlands. Most of these forests have been allowed to proceed through successional changes due to lack of fire or management for other objectives, and they now support denser forests of oak mixed with other hardwood species. Dead trees that provide sites for cavity nesters are now often removed from private woodlots or yards.

- Invasive plants such as buckthorn, etc. have destroyed many savanna-like habitats and will affect most oak woodlands in the state. Red-headed Woodpeckers prefer herbaceous ground cover as they often feed on the ground.
- European Starlings compete with this and other cavity-nesters for nest sites in and around homes and farms.
- Red-headed Woodpeckers fly low near roads and may be subject to automobile mortality.

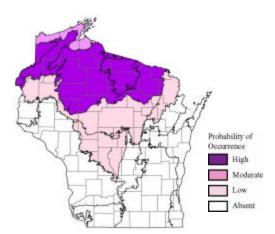
- Red-headed Woodpeckers are not area sensitive and could be managed for in smaller savanna restorations on private land.
- Experiment with management regimes that both regenerate oaks in southern forests while maintaining areas of older forests, including various harvest techniques and the use of prescribed fire.
- Manage deer populations at a level that allows for oak regeneration.
- There is a large need to control exotic, invasive shrubs.
- Conduct research on the potential negative effects of automobile collisions on populations.
- This would be a good species and habitat to target for a large, private lands cooperative effort.

Black-backed Woodpecker (Picoides arcticus)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	2
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.1
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Northern wet forest
Forest Transition	Northern wet forest
North Central Forest	Boreal forest
North Central Forest	Northern mesic forest
North Central Forest	Northern wet forest
North Central Forest	Northern wet-mesic forest
North Central Forest	Open bog
Northern Highland	Northern dry forest
Northern Highland	Northern dry -mesic forest
Northern Highland	Northern wet forest
Northern Highland	Open bog
Northwest Lowlands	Boreal forest
Northwest Lowlands	Northern wet forest
Northwest Lowlands	Open bog
Northwest Sands	Northern dry forest
Northwest Sands	Northern dry -mesic forest
Northwest Sands	Northern wet forest
Northwest Sands	Open bog
Northwest Sands	Pine barrens
Superior Coastal Plain	Boreal forest
Superior Coastal Plain	Northern wet forest

Threats and Issues

- Fire suppression in northern dry forests.
- Removal of dead and dying trees within northern forests and bogs, which limitsforaging opportunities for Black-backed Woodpeckers.

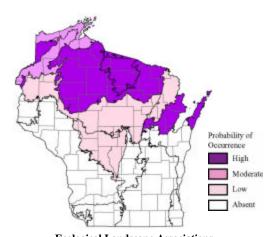
- Planning that allows for a "safe" and acceptable amount of dead and dying trees in fire-prone systems for this and other species and includes a disaster response plan.
- Management should focus on maintenance of natural patterns of forest fire, wood-boring insects, disease, and decay. Management recommendations include, (1) retain all trees with nest cavities; (2) retain snags in harvested areas; (3) retain the relatively older trees and a mix of healthy and diseased trees for nesting; (4) for foraging, retain dead patches of trees in a variety of decay stages, especially insect host trees, and those susceptible to future insect occupancy; (5) retain some tall hard dead trees for woodpecker drumming; and (6) limit insecticide use in forest habitats (Goggans et al 1989).
- Need planning and standards that incorporate "disturbance-dependent" species into forest management and fire management plans.
- Conduct research regarding Black-backed Woodpecker ecology and interactions with fire and insect
 infestations, including a comparison of densities and productivity between unburned forests and
 recent burns. Landscape relationships, including area sensitivity, juxtaposition of habitats, and use of
 corridors are virtually unknown and need research.

Olive-sided Flycatcher (Contopus cooperi)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	2
Global threats:	4
Global population trend:	5
Mean Risk Score:	3.3
Area of importance:	2

^{*} Please see the <u>Description of Vertebrat e Species</u> Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations Please note that this is not a range map. Shading

does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
North Central Forest	Northern wet forest
North Central Forest	Northern wet-mesic forest
North Central Forest	Open bog
Northern Highland	Northern wet forest
Northern Highland	Open bog
Northern Lake Michigan Coastal	Great Lakes Ridge and Swale
Northern Lake Michigan Coastal	Northern wet forest
Northern Lake Michigan Coastal	Northern wet-mesic forest
Northwest Lowlands	Northern wet forest
Northwest Lowlands	Open bog
Northwest Sands	Northern wet forest

Threats and Issues

- Often associated with large openings after fires. Re-introducing fires into appropriate landscapes may benefit this species.
- Destruction of low-mid elevation Andean forests seems to be contributing to range-wide decline of this and other Neotropical migrants.
- Olive-sided Flycatchers are associated with beaver flowages that have retained large standing trees. Control of beavers may be reducing total amount of habitat; however, habitat doesn't seem to be limiting for this species.
- Lack of breeding habitat may not be limiting this species in Wisconsin as it is declining rangewide.

Priority Conservation Actions

Look for strong partnerships on wintering grounds in Central and South America to conserve this and all other Neotropical migrants.

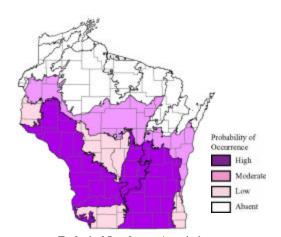
- Conduct research to better understand Olive-sided Flycatcher habitat selection in Wisconsin and its availability.
- Provide more contiguous, high-quality stopover habitat for this and other Neotropical migrants.

Acadian Flycatcher (Empidonax virescens)

Species Assessment Scores*

State rarity:	4
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	2
Mean Risk Score:	3.1
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations Please note that this is not a range ma

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Southern dry-mesic forest
Central Lake Michigan Coastal	Southern mesic forest
Central Sand Hills	Floodplain forest
Central Sand Hills	Southern dry forest
Central Sand Hills	Southern dry-mesic forest
Central Sand Hills	Southern mesic forest
Central Sand Plains	Southern dry-mesic forest
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Southern dry forest
Southeast Glacial Plains	Southern dry-mesic forest
Southeast Glacial Plains	Southern mesic forest
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Southern dry forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest

Threats and Issues

- Continued loss and fragmentation of forest habitat south of the tension zone.
- Loss or harvest of large, mature trees in oak woodlands in southwest Wisconsin degrades habitat quality.
- Invasive shrubs and herbaceous plants could be affecting the long-term ability of forests to regenerate into conditions suitable for Acadian Flycatcher and other interior forest bird species.

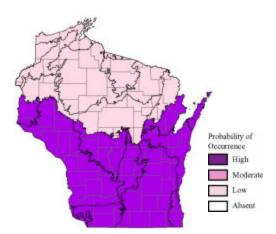
- Since many large forested areas in Southern Wisconsin are not publicly owned, the application of sustainable forest management practices is necessary to encourage the retention and production of large mature forests with tall closed canopies and high tree density.
- Develop methods for reducing fragmentation of habitat by housing development in forested areas.
- Research and monitoring to identify important areas, raise awareness about importance of these areas and characterize the effects of fragmentation.
- Provide public education about sustainable forest management processes, and expand assistance to
 private landowners in planing for timber harvests that accommodate the habitat needs of this and
 other uncommon willife species.
- Research to determine the minimum area requirements for stable breeding populations.
- Research to determine the effects of invasive exotic plants on Acadian Flycatcher habitat quality.

Willow Flycatcher (Empidonax traillii)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	2
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.1
Area of importance:	4

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associati ons

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

1	0	
Ecological Landscape	Community	
Central Lake Michigan Coastal	Shrub-carr	
Central Sand Hills	Calcareous fen	
Central Sand Hills	Shrub-carr	
Central Sand Hills	Southern sedge meadow	
Central Sand Hills	Wet-mesic prairie	
Central Sand Plains	Shrub-carr	
Central Sand Plains	Surrogate grasslands	
Northern Lake Michigan Coastal	Shrub-carr	
Southeast Glacial Plains	Bog relict	
Southeast Glacial Plains	Calcareous fen	
Southeast Glacial Plains	Dry-mesic prairie	
Southeast Glacial Plains	Mesic prairie	
Southeast Glacial Plains	Shrub-carr	
Southeast Glacial Plains	Southern sedge meadow	
Southeast Glacial Plains	Surrogate grasslands	
Southeast Glacial Plains	Wet-mesic prairie	
Southern Lake Michigan Coastal	Shrub-carr	
Southern Lake Michigan Coastal	Wet-mesic prairie	
Southwest Savanna	Dry-mesic prairie	
Southwest Savanna	Mesic prairie	
Southwest Savanna	Surrogate grasslands	
Western Coulee and Ridges	Dry-mesic prairie	
Western Coulee and Ridges	Shrub-carr	
Western Coulee and Ridges	Surrogate grasslands	
Western Prairie	Mesic prairie	
Western Prairie	Surrogate grasslands	

Threats and Issues

- Old-field succession to forests, human development pressure and intensification of agriculture are all pressures on this species.
- Grazing, clean agriculture, or large-scale grassland restoration that removes all woody cover are threats.
- Exotic invasives (reed canary grass) may be a long-term threat in wetland shrub-carr sites.

Priority Conservation Actions

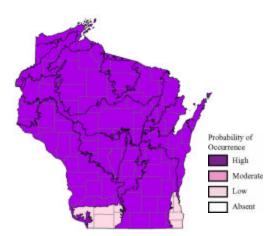
• Managers should work to maintain lowland shrub swamps, shrub carr, and scattered patches of upland shrubs in open grassland/natural areas for this species.

Least Flycatcher (Empidonax minimus)

Species Assessment Scores*

State rarity:	2
State threats:	3
State population trend:	5
Global abundance:	2
Global distribution:	3
Global threats:	2
Global population trend:	4
Mean Risk Score:	3
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Great Lakes Ridge and Swale
Central Lake Michigan Coastal	Northern mesic forest
Central Sand Plains	Floodplain forest
Central Sand Plains	Northern mesic forest
Forest Transition	Northern mesic forest
North Central Forest	Hardwood swamp
North Central Forest	Northern mesic forest
Northeast Sands	Northern dry forest
Northeast Sands	Northern dry -mesic forest
Northeast Sands	Northern mesic forest
Northern Highland	Northern dry -mesic forest
Northern Highland	Northern mesic forest
Northern Lake Michigan Coastal	Great Lakes Ridge and Swale
Northern Lake Michigan Coastal	Northern mesic forest
Northwest Lowlands	Northern mesic forest
Northwest Sands	Northern dry forest
Northwest Sands	Northern dry -mesic forest
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Hardwood swamp
Superior Coastal Plain	Boreal forest
Superior Coastal Plain	Northern mesic forest
Western Coulee and Ridges	Floodplain forest

Threats and Issues

- Least Flycathcers are forest generalists that needs large blocks of interior forest. Conversion to nonforest and forest fragmentation from housing or road development are serious threats.
- Like all long-distance migrants, the increasing amounts of towers, lighted tall buildings, and loss of habitat in key migratory areas may be playing a role in limiting populations.

Susceptible to cowbird nest parisitism.

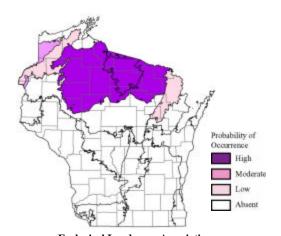
- Maintain large blocks of "working" forests for this and other forest generalists. Maintaining the size and quality of existing forets and adding forsest acreages where appropriate will benefit this species.
- Research is needed to determine if ATV trails and/or hiking trails fragment the forest.
- Create partnerships with urban decision makers to provide high-quality habitat in the form of parks, backyards, etc. and limit or mitigate impacts of lighted buildings, towers, etc.
- Look for strong partnerships on wintering grounds in Central and South America to conserve this and all other Neotropical migrants.

Boreal Chickadee (*Poecile hudsonica*)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	5
Global abundance:	2
Global distribution:	1
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.1
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations Please note that this is not a range map. Shading

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
North Central Forest	Boreal forest
North Central Forest	Northern wet forest
North Central Forest	Northern wet-mesic forest
Northeast Sands	Northern wet forest
Northeast Sands	Northern wet-mesic forest
Northern Highland	Boreal forest
Northern Highland	Northern wet forest
Northern Highland	Northern wet-mesic forest
Northwest Lowlands	Boreal forest
Northwest Lowlands	Northern wet forest
Northwest Sands	Northern wet forest

Threats and Issues

- Lack of fire may impact regeneration of some lowland coniferous forest types.
- Lowland coniferous forests may be subject to alteration from climate change and management that does not maintain needed structure and conifer dominance.
- Loss and fragmentation of coniferous wetlands and spruce-fir forests.
- Much of the original spruce-fir/boreal forest in Wisconsin was converted to aspen or farms on the Superior Clay Plain.
- Improper harvesting techniques in lowland conifer forests may alter hydrology and not be sustainable.

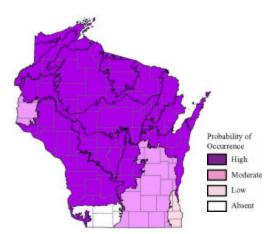
- Maintain coniferous landscapes with large areas of lowland coniferous forests.
- Utilize alternative silvicultural methods to increase boreal components in appropriate areas (e.g., allow succession of aspen to conifers).

Veery (Catharus fuscescens)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	4
Global abundance:	2
Global distribution:	2
Global threats:	3
Global population trend:	4
Mean Risk Score:	3
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological LandscapeCommunityCentral Lake Michigan CoastalGreat Lakes Ridge and SwCentral Lake Michigan CoastalHardwood swampCentral Lake Michigan CoastalShrub-carr	ale
Central Lake Michigan Coastal Hardwood swamp	ale
Central Lake Michigan Coastal Shrub-carr	
Central Bane Milengan Coastal Sindo ear	
Central Sand Hills Alder thicket	
Central Sand Hills Hardwood swamp	
Central Sand Hills Northern wet forest	
Central Sand Hills Shrub-carr	
Central Sand Plains Alder thicket	
Central Sand Plains Floodplain forest	
Central Sand Plains Hardwood swamp	
Central Sand Plains Northern wet forest	
Central Sand Plains Shrub-carr	
Central Sand Plains Southern dry-mesic forest	
Central Sand Plains White pine-red maple swar	mp
Forest Transition Alder thicket	
Forest Transition Hardwood swamp	
Forest Transition Northern mesic forest	
Forest Transition Northern wet forest	
Forest Transition Shrub-carr	
North Central Forest Alder thicket	
North Central Forest Boreal forest	
North Central Forest Hardwood swamp	
North Central Forest Northern mesic forest	
North Central Forest Northern wet forest	
North Central Forest Shrub-carr	
Northeast Sands Alder thicket	
Northeast Sands Hardwood swamp	
Northeast Sands Northern dry -mesic forest	
Northern Highland Alder thicket	
Northern Highland Hardwood swamp	
Northern Highland Northern dry -mesic forest	

Ecological Landscape	Community
Northern Highland	Northern wet forest
Northern Highland	Shrub-carr
Northern Lake Michigan Coastal	Boreal forest
Northern Lake Michigan Coastal	Great Lakes Ridge and Swale
Northern Lake Michigan Coastal	Hardwood swamp
Northern Lake Michigan Coastal	Northern mesic forest
Northern Lake Michigan Coastal	Shrub-carr
Northwest Lowlands	Alder thicket
Northwest Lowlands	Boreal forest
Northwest Lowlands	Northern wet forest
Northwest Sands	Alder thicket
Northwest Sands	Hardwood swamp
Northwest Sands	Northern dry -mesic forest
Northwest Sands	Northern wet forest
Southeast Glacial Plains	Hardwood swamp
Southeast Glacial Plains	Shrub-carr
Superior Coastal Plain	Alder thicket
Superior Coastal Plain	Boreal forest
Superior Coastal Plain	Hardwood swamp
Superior Coastal Plain	Shrub-carr
Western Coulee and Ridges	Alder thicket
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Hemlock relict
Western Coulee and Ridges	Pine relict
Western Coulee and Ridges	Shrub-carr
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest

Threats and Issues

- In northern Wisconsin, this is a moist forest generalist that uses shrubby understories of many different forest types. Loss of forest cover and fragmentation from houses and roads is the most serious threat.
- Invasive species that impact the forests' ability to regenerate threaten this species in many areas of southern Wisconsin and some areas in northern Wisconsin.
- In fragmented habitats, this species is more vulnerable to parasitism by cowbirds and predation from meso-predators and cats.
- Like all Neotropical migrants, Veery are sensitive to changes in habitat quality on breeding grounds and migratory routes.

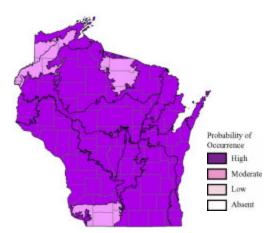
- Conservation of large blocks of "working" forest land is the most important priority for this and many other forest birds.
- Creating a network of stopover sites along Lake Michigan and in other altered landscapes would benefit this and many other Neotropical migrants.
- There is a need to mitigate the impacts of tall lighted structures on migratory bird populations.
- Control spread of invasive species in forests.

Wood Thrush (Hylocichla mustelina)

Species Assessment Scores*

State rarity:	2
State threats:	3
State population trend:	2
Global abundance:	2
Global distribution:	4
Global threats:	4
Global population trend:	4
Mean Risk Score:	3
Area of importance:	3

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

1	0 0
Ecological Landscape	Community
Central Lake Michigan Coastal	Great Lakes Ridge and Swale
Central Lake Michigan Coastal	Southern dry-mesic forest
Central Lake Michigan Coastal	Southern mesic forest
Central Sand Hills	Southern dry forest
Central Sand Hills	Southern dry-mesic forest
Central Sand Plains	Floodplain forest
Central Sand Plains	Southern dry-mesic forest
Central Sand Plains	Southern mesic forest
Forest Transition	Northern mesic forest
North Central Forest	Northern mesic forest
Northern Lake Michigan Coastal	Great Lakes Ridge and Swale
Northern Lake Michigan Coastal	Northern mesic forest
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Oak woodland
Southeast Glacial Plains	Southern dry forest
Southeast Glacial Plains	Southern dry-mesic forest
Southeast Glacial Plains	Southern mesic forest
Southern Lake Michigan Coastal	Southern dry-mesic forest
Southern Lake Michigan Coastal	Southern mesic forest
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Oak woodland
Western Coulee and Ridges	Southern dry forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest
Western Prairie	Southern dry-mesic forest
Western Prairie	Southern mesic forest

Threats and Issues

- Continued loss and fragmentation of forest habitat south of the tension zone.
- Brown-headed Cowbird parasitism and high nest predation increase in forests fragmented by roads, houses, utility lines, etc.
- Invasive plants are replacing native shrubs used for nesting.
- Wood Thrushes are threatened by increased rates of tropical deforestation and lack of stopover habitat along migration routes.

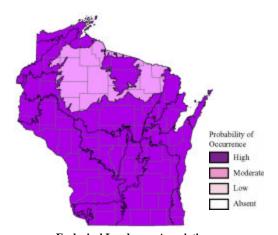
- Wood Thrushes tend to be forest generalists and benefit from maintaining large blocks of unfragmented forests with ample canopy gaps, and/or dense shrub/sapling patches.
- Work to provide private landowners with professional forest management assistance in large areas of forested private lands.
- Maintain ample migratory stopover habitat in highly developed areas for this and many other Neotropical migrants.
- Provide incentives for conserving large tracts of forest from development in key Important Bird Areas.
- Look for strong partnerships on wintering grounds in Central and South America to conserve this and all other Neotropical migrants.

Brown Thrasher (Toxostoma rufum)

Species Assessment Scores*

State rarity:	2
State threats:	3
State population trend:	4
Global abundance:	2
Global distribution:	3
Global threats:	3
Global population trend:	4
Mean Risk Score:	3
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u> Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations Please note that this is not a range map. Shading

does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Oak barrens
Central Sand Plains	Pine barrens
Central Sand Plains	Sand prairie
Northeast Sands	Bracken grassland
Northeast Sands	Pine barrens
Northwest Sands	Pine barrens
Southeast Glacial Plains	Oak opening
Southwest Savanna	Oak opening
Western Coulee and Ridges	Oak barrens
Western Coulee and Ridges	Oak opening
Western Coulee and Ridges	Sand prairie

Threats and Issues

- Loss of barrens and early-seral shrublands due to lack of fire/disturbance.
- Home and rural development is probably impacting this species indirectly by increasing the amount of cats and other predators on the landscape.
- Conversion of traditional farms to intensive agriculture removes woody edges and hedgerows or makes them less suitable.
- The conversion of barrens habitat due to fire suppression and woody encroachment or tree planting can eventually render habitat unsuitable.
- It is not known how this species responds to invasive exotic shrubs.

Priority Conservation Actions

Most of the population probably exists on private farms, etc. Need to devise conservation actions that accomodate barrens, savanna, and shrublands restoration on a smaller, local scale.

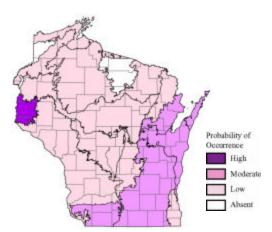
- More research designed at understanding limiting factors for this species including rural development, invasive exotic shrubs, and predators.
- Restoration of conifer/oak barrens and shrub habitats through fire and/or timber management.
- Training for private lands initiatives, farmers, etc. to manage for shrublands and hedgerows on small sites.

Loggerhead Shrike (Lanius ludovicianus)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	1
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.4
Area of importance:	1

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Surrogate grasslands
Central Sand Plains	Surrogate grasslands
Northwest Sands	Surrogate grasslands
Southeast Glacial Plains	Dry prairie
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Dry prairie
Western Prairie	Dry-mesic prairie
Western Prairie	Mesic prairie
Western Prairie	Sand prairie
Western Prairie	Surrogate grasslands

Threats and Issues

- In Wisconsin, loss of pasture, development, and intensification of agriculture all probably limit populations, but it's difficult to study due to low population sizes.
- It's been suggested that Loggerhead Shrike are susceptible to agricultural pesticides on breeding and wintering grounds.
- It is not clear why populations are being limited.

Priority Conservation Actions

 Continue to provide large acreages of grasslands for Loggerhead Shrikes and other grassland birds of high priority.

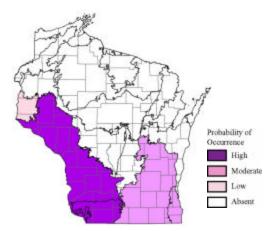
- Provide for scattered perch sites and clumps of shrubs for nesting sites, while not fragmenting key grassland bird habitat.
- More research is needed to determine the primary causes of population decline.

Bell's Vireo (Vireo bellii)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	5
Global threats:	4
Global population trend:	5
Mean Risk Score:	4
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Southeast Glacial Plains	Dry prairie
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Shrub-carr
Southeast Glacial Plains	Surrogate grasslands
Southeast Glacial Plains	Wet-mesic prairie
Southern Lake Michigan Coastal	Wet-mesic prairie
Southwest Savanna	Dry prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Oak opening
Southwest Savanna	Surrogate grasslands
Southwest Savanna	Wet-mesic prairie
Western Coulee and Ridges	Dry prairie
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Oak opening
Western Coulee and Ridges	Sand prairie
Western Coulee and Ridges	Shrub-carr
Western Coulee and Ridges	Surrogate grasslands
Western Coulee and Ridges	Wet prairie
Western Coulee and Ridges	Wet-mesic prairie

- Lack of fire or disturbance to regenerate shrubs, etc.
- Succession of old, shrubby fields to forest is a primary threat. Management is needed to maintain shrubby areas in grassland/natural landscapes.
- Intensification of agriculture, housing development, etc. are all threats.

- Large water releases from dams and reservoirs in April-June can inundate low-lying vireo nests in downstream areas, resulting in high nest loss and egg/nestling mortality.
- Modifications that promote habitat patchiness apparently increase rates of cowbird parasitism, resulting in reduced nesting success. Increased habitat patchiness also acts to segregate remaining breeding vireos into disjunct subpopulations that are more susceptible to extirpation.
- Bell's Vireos might not be present if grazing is too intense.
- It is not known how Bell's Vireos respond to invasive shrubs.
- Probably sensitive to predation from cats and other abundant meso-predators.

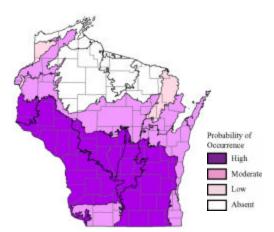
- It is likely that most Bell's Vireos are on private land, therefore we need programs that manage for this bird on private lands.
- Preserve shrubby vegetation along roadsides, fences, and powerlines. To improve shrub habitat, remove exotic vegetation and occasionally trees and shrubs that no longer provide dense vegetation cover below 7 feet. Revegetate riparian and shrub corridors to increase extent of nesting habitat and to deter cowbirds.
- Conduct research to develop management recommendations for this and other shrubland species, including investigating the potential impacts of invasive plants, grazing, and meso-predators.

Blue-winged Warbler (Vermivora pinus)

Species Assessment Scores*

State rarity:	2
State threats:	3
State population trend:	1
Global abundance:	4
Global distribution:	4
Global threats:	3
Global population trend:	4
Mean Risk Score:	3
Area of importance:	4

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Shrub-carr
Central Sand Hills	Southern dry forest
Central Sand Plains	Floodplain forest
Central Sand Plains	Shrub-carr
Central Sand Plains	Southern dry-mesic forest
Southeast Glacial Plains	Bog relict
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Oak opening
Southeast Glacial Plains	Oak woodland
Southeast Glacial Plains	Shrub-carr
Southeast Glacial Plains	Southern dry forest
Southeast Glacial Plains	Southern dry-mesic forest
Southeast Glacial Plains	Southern tamarack swamp (rich)
Western Coulee and Ridges	Bedrock glade
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Oak opening
Western Coulee and Ridges	Oak woodland
Western Coulee and Ridges	Shrub-carr
Western Coulee and Ridges	Southern dry forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest

- Succession of woodlands to older developmental stages may impacts this edge/early seral specialist, as may the loss of interior shrub patches and/or shrubby habitats.
- Loss and fragmentation of southern forests.
- Increased rates of cowbird parasitism and nest predation from adjacent farming activities and housing development.

- Invasive plants may affect the long-term health of southern woodlands.
- Hybridization with Golden-winged Warbler may be an issue in some populations.

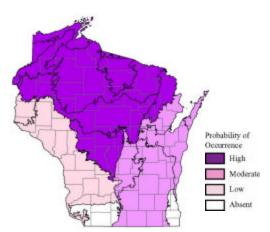
- Conservation of larger blocks of woodlands with a component of the woodland in an early seral stage. Retain "feathered" edges.
- Stop or reduce fragmentation of important deciduous woodlands south of the tension zone.
- Regeneration treatments for oak should benefit this species.
- Manage power line rights-of-way as shrubland.
- Conduct research to determine which habitats are source populations for this species and how much of this habitat exists in the state.
- Conduct research to determine the extent to which hybridization with Golden-winged Warbler is occurring in Wisconsin and the effects of hybridization on the gene pool.

Golden-winged Warbler (Vermivora chrysoptera)

Species Assessment Scores*

State rarity:	2
State threats:	4
State population trend:	4
Global abundance:	4
Global distribution:	4
Global threats:	4
Global population trend:	5
Mean Risk Score:	3.9
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Shrub-carr
Central Sand Plains	Alder thicket
Central Sand Plains	Northern wet forest
Central Sand Plains	Open bog
Central Sand Plains	Shrub-carr
Forest Transition	Alder thicket
Forest Transition	Northern mesic forest
Forest Transition	Northern wet forest
Forest T ransition	Shrub-carr
North Central Forest	Alder thicket
North Central Forest	Hardwood swamp
North Central Forest	Northern mesic forest
North Central Forest	Northern wet forest
North Central Forest	Open bog
North Central Forest	Shrub-carr
Northeast Sands	Alder thicket
Northeast Sands	Northern dry forest
Northeast Sands	Northern dry -mesic forest
Northern Highland	Alder thicket
Northern Highland	Northern dry -mesic forest
Northern Highland	Northern wet forest
Northern Highland	Open bog
Northern Highland	Shrub-carr
Northern Lake Michigan Coastal	Shrub-carr
Northwest Lowlands	Alder thicket
Northwest Lowlands	Northern wet forest
Northwest Lowlands	Open bog
Northwest Sands	Alder thicket
Northwest Sands	Northern dry forest
Northwest Sands	Northern dry -mesic forest
Northwest Sands	Northern wet forest

Ecological Landscape	Community	
Northwest Sands	Open bog	
Southeast Glacial Plains	Shrub-carr	
Superior Coastal Plain	Alder thicket	
Superior Coastal Plain	Open bog	
Superior Coastal Plain	Shrub-carr	

Threats and Issues

- Hybridization with Blue-Winged Warblers where species ranges overlap may be a threat (Confer 1992).
- Loss of early-succesional deciduous shrubland habitat (Martin *et al.* 2004).
- Brush removal along road and utility rights-of-way during the breeding season.
- Herbicide application to eliminate deciduous shrub/tree growth prior to conifer planting reduces habitat quality. Creation of conifer plantations results in loss of habitat.
- Increasing meso-predator populations (especially raccoons, skunks, and feral cats) due to development and forest fragmentation in northern forests may be negatively impacting nest productivity.
- Global climate change models predict Golden-winged Warbler extirpation from Wisconsin during the breeding season is likely in the long-term
- Urbanization and/or succession of early seral woodlands (Roth 2001)
- Negative public perception of clearcutting limits some management options beneficial to Goldenwinged Warblers.

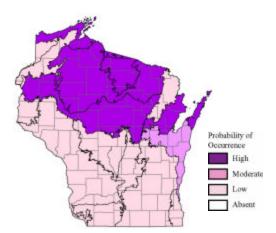
- Maintain large blocks of unfragmented northern forests.
- Plant native shrubs in utility rights-of-way and remove brush outside of the nesting season.
- Support initiatives to reduce greenhouse gas emissions in order to slow/stop global warming and climate change due to human-related activities.
- Maintain lowland shrub communities especially alder thicket and shrub-carr (Hanowski 2002).
- Improve quality of shrubland habitat to improve site use and nest productivity.

Black-throated Blue Warbler (Dendroica caerulescens)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	1
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	2
Mean Risk Score:	2.7
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Northern mesic forest
Forest Transition	Northern dry -mesic forest
Forest Transition	Northern mesic forest
North Central Forest	Northern dry -mesic forest
North Central Forest	Northern mesic forest
Northern Highland	Northern dry-mesic forest
Northern Highland	Northern mesic forest
Northern Lake Michigan Coastal	Northern dry -mesic forest
Northern Lake Michigan Coastal	Northern mesic forest
Superior Coastal Plain	Boreal forest
Superior Coastal Plain	Northern dry -mesic forest
Superior Coastal Plain	Northern mesic forest

- Climate change for this and many other long-distance migrants may affect timing of food sources (insects) during migration, and thus impact body condition for breeding.
- Threats during migration include collisions with lighted towers and buildings. Research on marked populations from the Eastern U.S. suggests that adult survivorship during migration is a limiting factor.
- Loss or fragmentation of large blocks of older, structurally complex forests. Black-throated Blue Warblers need larger blocks of forest with interior shrubby gaps.
- Overbrowsing by deer may suppress populations locally by reducing the shrub layer available for nesting; however, research in the Upper Peninsula of Michigan was inconclusive for this species in relation to deer densities.

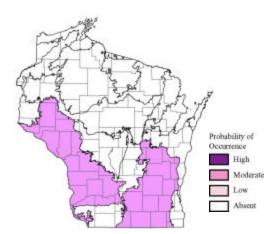
- Since this species needs larger blocks of mature forest, the best opportunities may rest on public lands.
- Identify larger blocks of forests in public ownership that can be managed for this and other interior forest species.
- Conduct research to better define how large forest patches should be to reduce competition with edge generalist species.
- Research the magnitude of window/tower strikes in Wisconsin and the potential effects of deer browsing on habitat quality.

Yellow-throated Warbler (Dendroica dominica)

Species Assessment Scores*

State rarity:	5
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	3
Global threats:	3
Global population trend:	2
Mean Risk Score:	3.1
Area of importance:	1

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Southern dry-mesic forest
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Southern dry-mesic forest

Threats and Issues

- Fragmentation and loss of the Sugar River Floodplain Forest.
- This species is associated with Sycamore in the Sugar River Floodplain forests and with large supercanopy White Pines in the Baraboo Hills and at Wyalusing State Park.
- More data are needed on the actual range and population size of this species.

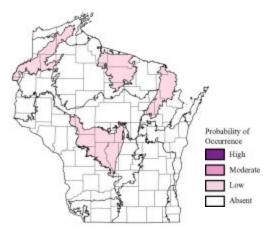
- Conduct targeted surveys to delineate actual population size and range.
- Maintain sycamores in the Sugar River floodplain. Assess feasibility of restoration of appropriate floodplain forest habitat in the Sugar and other far southern Wisconsin floodplains.
- Protection of the few stands of sycamore in southern Wisconsin.

Kirtland's Warbler (Dendroica kirtlandii)

Species Assessment Scores*

State rarity:	NA
State threats:	5
State population trend:	3
Global abundance:	5
Global distribution:	5
Global threats:	5
Global population trend:	5
Mean Risk Score:	4.7**
Area of importance:	1

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<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Northern dry forest
Central Sand Plains	Pine barrens
Northeast Sands	Northern dry forest
Northeast Sands	Pine barrens
Northern Highland	Northern dry forest
Northern Highland	Pine barrens
Northwest Sands	Northern dry forest
Northwest Sands	Pine barrens

Threats and Issues

- Fire suppression and conversion of jack pine forest to red pine are the two greatest threats to the pine barrens ecosystem that provide habitat for Kirtland's Warbler.
- This species is not currently known to breed in Wisconsin, but the Michigan population is expanding and opportunities for large-scale jack pine management exist in northern Wisconsin.

- Work with forestry partners in appropriate landscapes to provide large acreages of young jack pine/pine barrens habitat rotated throughout the landscape. This species can be managed for within an even-aged treatment. Careful planning can ensure that an appropriate amount of habitat exists within a landscape at any one time.
- Create cost-sharing incentives for large private landowners to manage for pine barrens and early successional dry forest in conjunction with public land management for this species.

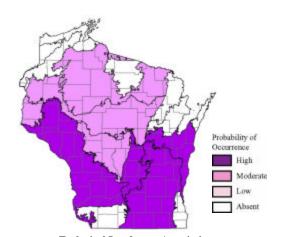
^{**} Based on fewer than the standard 7 criteria.

Cerulean Warbler (Dendroica cerulea)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	5
Global abundance:	3
Global distribution:	4
Global threats:	4
Global population trend:	5
Mean Risk Score:	4.1
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Floodplain forest
Central Lake Michigan Coastal	Southern dry-mesic forest
Central Sand Hills	Floodplain forest
Central Sand Hills	Southern dry-mesic forest
Central Sand Plains	Floodplain forest
Central Sand Plains	Southern dry-mesic forest
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Oak woodland
Southeast Glacial Plains	Southern dry-mesic forest
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Oak woodland
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest

- The loss of the large tree structural component in southern deciduous forests negatively impacts this species. Cerulean Warblers seem to be more abundant when there are large canopy trees that provide a diverse, complex canopy structure. Currently, oak species make up most of this upper canopy structure. The long-term sustainabilty of the oak component in southern forests is a critical conservation issue for this and other species.
- Cerulean Warblers are an area-sensitive forest-interior species that is threatened by the continued loss and fragmentation of appropriate forest habitat south of the tension zone.
- Brown-headed Cowbirds and some predators (e.g., squirrels, jays, crows) pose a threat in forested areas, particularly in areas that are fragmented by agriculture and housing.
- Invasive plants that affect the forests' long-term ability to regenerate are a problem.

• Deforestation of mid-elevational tropical forests on the east slope of the Andes Mountains where this species winters is a significant contributor to its long-term decline.

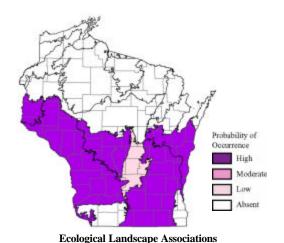
- Since many large forested areas in southern Wisconsin are not publicly owned, sustainable forest management practices are necessary to protect the long-term survival of oak forests.
- Experiment with management regimes that regenerate oaks in southern forests while maintaining large core areas of older forests, including various harvest techniques and the use of prescribed fire.
- Manage deer populations at a level that allows for oak regeneration.
- Implement policy aimed at reducing fragmentation of habitat through housing development in forested areas.
- Conduct inventories to better delineate Cerulean Warbler populations on private lands.
- Develop parterships with Andean conservation organizations to preserve South American wintering habitat.

Prothonotary Warbler (Protonotaria citrea)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	4
Global threats:	4
Global population trend:	4
Mean Risk Score:	3.4
Area of importance:	3

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Floodplain forest
Central Sand Hills	Floodplain forest
Central Sand Plains	Floodplain forest
Southeast Glacial Plains	Floodplain forest
Western Coulee and Ridges	Floodplain forest
Western Prairie	Floodplain forest

Threats and Issues

- Changes in hydrology from dammings may impact maintenance and regeneration of floodplain forests.
- Loss, degradation, and fragmentation of deciduous floodplain forests in Wisconsin.
- Invasive plants such as reed canary grass impede regeneration in floodplain forests.
- Altering lake/river levels to facilitate motorboat recreation could impact floodplain forests and associated species.
- Removal of cavity trees in floodplain forests reduces available nesting habitat.

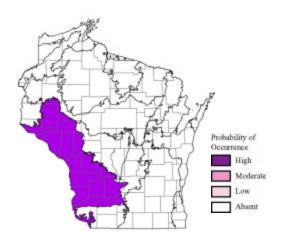
- Practice sustainable forest management and invasive species management in riparian areas, maintaining large blocks of older forest with abundant snags.
- Develop incentives for farmers to put formerly forested riparian areas back into forests for water quality reasons as well as for wildlife habitat.
- Possibilities exist to expand the Conservation Reserve Enhancement Program, Conservation Reserve Program, and other flood control initiatives to pay for floodplain forest restoration.
- Nest box programs in fragmented or degraded riparian areas have increased nesting success in Canada and other areas within this species range.

Worm-eating Warbler (Helmitheros vermivorus)

Species Assessment Scores*

State rarity:	5
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	4
Global threats:	4
Global population trend:	3
Mean Risk Score:	3.6
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations Please note that this is not a range ma

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Western Coulee and Ridges	Southern dry forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest

Threats and Issues

- Loss and fragmentation of large blocks of southern deciduous forest in southwest Wisconsin.
- Invasive shrubs/herbaceous plants detrimental to southern mesic/dry-mesic forests may also be detrimental to this species and the forests it depends on.
- Lack of basic population distribution and inventory information for this species in Wisconsin.

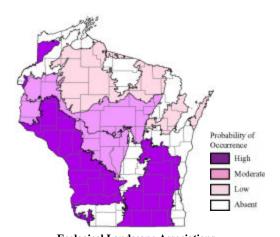
- Targeted inventories of large forest blocks in southwest Wisconsin would provide a better understanding of distribution and habitat needs.
- Conservation of large blocks of forest in southwest Wisconsin through preserves, sound forest management, etc.

Louisiana Waterthrush (Seiurus motacilla)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	3
Global abundance:	4
Global distribution:	3
Global threats:	4
Global population trend:	2
Mean Risk Score:	3.1
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Southern dry-mesic forest
Forest Transition	Coldwater streams
Forest Transition	Coolwater streams
Northwest Lowlands	Coolwater streams
Southeast Glacial Plains	Coolwater streams
Southeast Glacial Plains	Southern dry-mesic forest
Southeast Glacial Plains	Southern mesic forest
Western Coulee and Ridges	Coldwater streams
Western Coulee and Ridges	Coolwater streams
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest
Western Prairie	Coldwater streams
Western Prairie	Coolwater streams

- Conversion of cold-water stream hydrology or groundwater hydrology at seeps on escarpments in forested systems would impact this species.
- Continued loss and fragmentation of forest habitat south of the tension zone.
- Stream management for trout is sometimes at odds with this species. This species needs vegetated stream banks, deadfalls, coarse woody debris, and canopy cover. Conversion to rip-rap is detrimental.
- Invasive shrubs and herbaceous plants could be affecting the long-term ability of forests to regenerate into conditions suitable for Louisiana Waterthrush and other species.
- Louisiana Waterthrushes feed along cold-water streams in forested systems. Pollution, etc. that would effect cold-water stream food webs would be detrimental to this species.

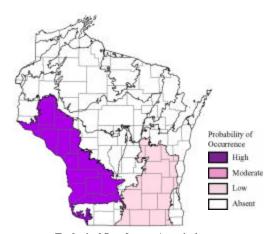
- Since many large forested areas in southern Wisconsin are not publicly owned, sustainable forestry practices are necessary to protect the long-term survival of forests.
- Work with fisheries programs and Trout Unlimited to balance the needs of trout with those of Louisiana Waterthrush and other stream-side foragers.
- Develop methods for reducing fragmentation of habitat by housing development in forested areas.

Kentucky Warbler (Oporornis formosus)

Species Assessment Scores*

State rarity:	4
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.4
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape AssociationsPlease note that this is not a range map. Shading

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Southern dry-mesic forest
Southeast Glacial Plains	Southern mesic forest
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest

Threats and Issues

- The greatest threat to this species is the continued loss and fragmentation of forest habitat south of the tension zone. Since this species prefers rich upland forests and riparian woods, it is also at threat from loss of habitat due to altered water regimes and invasive plants.
- Alteration of hydrology due to dammings affects maintenance and regeneration of floodplain forests.
- Infestations of invasive plants such as reed canary grass are causing tree regeneration problems in most riparian systems along major rivers.
- There is a lack of sufficient inventory and population data on this species in many areas within it's range in southwest Wisconsin.

- Since many large forested areas in southern Wisconsin are not publicly owned, helping landowners gain access to professional foresters, ecologists, and wildlife managers is critical to ensure that sustainable management is taking place.
- Providing expertise and incentives for managing invasives that affect forest regeneration is a critical step. Research on techniques to regenerate forests with invasive species infestations is needed.

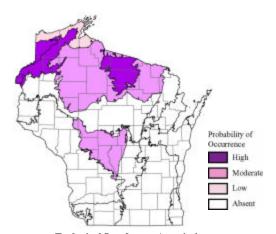
- Determine methods for reducing fragmentation of habitat through housing development in forested areas.
- Use Geographic Information Systems in partnership with volunteer birders and other future inventory efforts to gain a better understanding of the Important Bird Areas that contain habitat for this and many other interior Neotropical migrants in southwest Wisconsin.

Connecticut Warbler (Oporornis agilis)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	3
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.3
Area of importance:	4

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Northern dry forest
Central Sand Plains	Northern wet forest
Central Sand Plains	Open bog
Central Sand Plains	Pine barrens
North Central Forest	Northern wet forest
North Central Forest	Open bog
Northern Highland	Boreal rich fen
Northern Highland	Northern dry forest
Northern Highland	Northern dry -mesic forest
Northern Highland	Northern wet forest
Northern Highland	Open bog
Northwest Lowlands	Northern dry forest
Northwest Lowlands	Northern wet forest
Northwest Lowlands	Open bog
Northwest Sands	Northern dry forest
Northwest Sands	Northern dry -mesic forest
Northwest Sands	Northern wet forest
Northwest Sands	Open bog
Northwest Sands	Pine barrens

- The loss of jack pine forests and barrens due to woody encroachment in the absence of fire, and cover type conversions to red pine plantations are threats to this species' habitat.
- Loss and conversion of lowland coniferous forests to open types.
- Lack of basic demographic data in Wisconsin.
- Collisions with towers and large buildings may have significant impacts on populations (Pitocchelli et al. 1997).

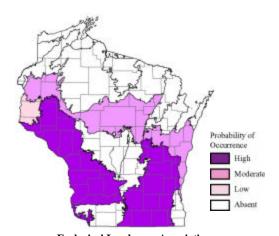
- Increase total acreages of jack pine including naturally regenerated stands where feasible.
- Increase total acreages of conifer barrens and promote jack pine inclusions in existing barrens sites.
- Implement and evaluate programs in urban areas that minimize risk of collisions with lighted towers and buildings.
- Conduct research on all aspects of breeding biology, particularly how breeding is affected by various management activities.

Hooded Warbler (Wilsonia citrina)

Species Assessment Scores*

State rarity:	4
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.3
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Southern dry-mesic forest
Central Lake Michigan Coastal	Southern mesic forest
Forest Transition	Southern dry-mesic forest
Forest Transition	Southern mesic forest
Southeast Glacial Plains	Southern dry-mesic forest
Southeast Glacial Plains	Southern mesic forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest
Western Prairie	Southern dry-mesic forest
Western Prairie	Southern mesic forest

- The greatest threat to this species is from the continued loss and fragmentation of forest habitat south of the tension zone.
- Hooded Warbler needs dense shrubby areas within older, large forested areas. Some research has
 shown that they will use buckthorn, but if buckthorn impacts the forests' long-term ability to
 regenerate, then it is ultimately harmful to Hooded Warbler populations.
- Like this and other species that requrie shrubby areas to nest, high deer populations likely decrease habitat quality.
- Increased transportation and energy infrastructure fragments existing habitat.
- Exurban development adjacent to high-quality habitat may be impacting predator populations and thereby reducing nesting success.
- The range, distribution, and abundance of this species in privately-owned forests is unknown, but could be estimated based on the occurrence of large blocks of dominantly hardwood forest. Fragmentation of these forests could be a factor determining the abundance of Hooded Warblers.

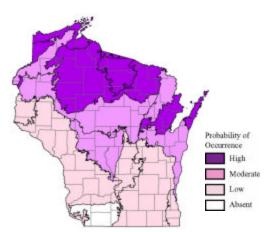
- Since many large forested areas in southern Wisconsin are not publicly owned, helping landowners gain access to resource professionals is critical to ensure that sustainable management is taking place.
- Inventories are needed in older forest blocks prior to management, to ensure that practices used will accommodate Hooded Warblers if they are found occupying the area.
- Selective harvest, both single tree and group selection to regenerate healthy forests should improve the condition of stands for this interior gap specialist. However, deer browsing would have to be controlled for regeneration to be successful.
- Develop methods for reducing fragmentation of habitat through housing development in key forested areas.
- Conservation of this, and many other southern forest species, will need to take into account the impacts of rapidly spreading invasive plants such as garlic mustard and buckthorn.
- Additional research and monitoring is needed to identify important habitat and study the effects of fragmentation.
- Raise awareness about the importance of known areas (e.g., Kettle Moraine, Baraboo Hills)

Canada Warbler (Wilsonia canadensis)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	3
Global abundance:	3
Global distribution:	3
Global threats:	4
Global population trend:	4
Mean Risk Score:	3.3
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Lake Michigan Coastal	Great Lakes Ridge and Swale
Forest Transition	Northern wet-mesic forest
North Central Forest	Alder thicket
North Central Forest	Boreal forest
North Central Forest	Hardwood swamp
North Central Forest	Northern mesic forest
North Central Forest	Northern wet forest
North Central Forest	Northern wet-mesic forest
Northeast Sands	Northern wet-mesic forest
Northern Highland	Hardwood swamp
Northern Highland	Northern dry -mesic forest
Northern Highland	Northern wet forest
Northern Highland	Northern wet-mesic forest
Northern Lake Michigan Coastal	Boreal forest
Northern Lake Michigan Coastal	Boreal rich fen
Northern Lake Michigan Coastal	Great Lakes Ridge and Swale
Northern Lake Michigan Coastal	Hardwood swamp
Northern Lake Michigan Coastal	Northern mesic forest
Northern Lake Michigan Coastal	Northern wet-mesic forest
Northwest Lowlands	Boreal forest
Northwest Lowlands	Northern wet forest
Northwest Lowlands	Northern wet-mesic forest
Superior Coastal Plain	Boreal forest
Superior Coastal Plain	Hardwood swamp
Superior Coastal Plain	Northern wet-mesic forest

Threats and Issues

- Mortality from communication towers, wind turbines, and other tall, lit human-made structures may be contributing to long-term decline of this and many other Neotropical migrants.
- Loss and fragmentation of northern forests through residential development, road-building, and habitat conversion.
- This species prefers multi-storied, structurally complex forests and is threatened by simplification of forest structure and composition.
- Populations of this species have been shown to be negatively affected in areas of heavy deer browse that reduces understory density (Conway 1999).
- Canada Warblers are vulnerable to brood parisitism by Brown-headed Cowbirds and to predation in fragmented areas.
- Deforestation of mid-elevational tropical forests on the east slope of the Andes Mountains where this species winters is a significant contributor to its long-term decline.
- The invasion of woody exotics such as buckthorn and honeysuckle may lower habitat quality for this species by affectin the ability of forests to regenerate and maintain themselves.

- Conduct research to identify limiting factors and habitat associations. It is not clear if loss of wintering ground habitat is the primary limiting factor for North American populations.
- Forest management that promotes structurally complex understories within large forest blocks.
- Reduce deer densities in Canada Warbler conservation areas.
- Apply and monitor forest management practices that promote structurally complex forests at stand and landscape levels.

Dickcissel (Spiza americana)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	5
Global abundance:	2
Global distribution:	4
Global threats:	4
Global population trend:	4
Mean Risk Score:	3.7
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Surrogate grasslands
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Mesic prairie
Western Prairie	Surrogate grasslands

- Succession of grassland habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth.
- Intensification of agriculture, including early and frequent harvest of hay and conversion of idle grassland to row crops or to tree plantations.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.
- Dickcissel is a neotropical migrant and thus faces threats due to habitat conversion or alteration on wintering and migration grounds.
- Deliberate poisoning with agricultural pesticides is a known threat in the wintering grounds; pesticides may be a problem on breeding grounds as well.

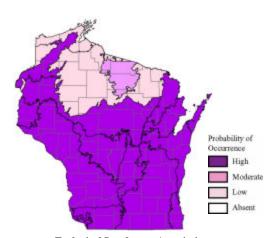
- Avoid disturbance of breeding habitat until mid- to late-August if possible for this late-nesting species.
- This species prefers habitat with a component of stiff-stemmed forbs.
- Continue agricultural set-aside programs, especially those that allow for permanent protection of
 preferred habitats. Prevent tree planting in important grassland areas, particularly in southern
 Wisconsin.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Create incentives for delaying grass/legume hay harvest until after the primary breeding season.
- Cost-sharing partnerships are key for conserving this species in working agricultural landscapes.

Field Sparrow (Spizella pusilla)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	5
Global abundance:	2
Global distribution:	2
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.3
Area of importance:	4

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Dry prairie
Central Sand Hills	Sand prairie
Central Sand Hills	Wet-mesic prairie
Central Sand Plains	Dry prairie
Central Sand Plains	Oak barrens
Central Sand Plains	Pine barrens
Central Sand Plains	Sand prairie
Central Sand Plains	Surrogate grasslands
Northeast Sands	Bracken grassland
Northeast Sands	Pine barrens
Northern Lake Michigan Coastal	Cedar glade
Northwest Sands	Pine barrens
Northwest Sands	Surrogate grasslands
Southeast Glacial Plains	Cedar glade
Southeast Glacial Plains	Dry prairie
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Oak opening
Southeast Glacial Plains	Surrogate grasslands
Southeast Glacial Plains	Wet-mesic prairie
Southern Lake Michigan Coastal	Oak opening
Southern Lake Michigan Coastal	Wet-mesic prairie
Southwest Savanna	Dry prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Oak opening
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Cedar glade
Western Coulee and Ridges	Dry prairie
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Oak barrens

Ecological Landscape	Community
Western Coulee and Ridges	Oak opening
Western Coulee and Ridges	Sand prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Cedar glade
Western Prairie	Dry prairie
Western Prairie	Mesic prairie
Western Prairie	Oak opening
Western Prairie	Sand prairie
Western Prairie	Surrogate grasslands

Threats and Issues

- Field Sparrows require open herbaceous areas with a woody component. Lack of fire in systems is a threat to this species.
- Like many open space, grassland/shrubland birds this species is being impacted by development and intensification of agriculture.
- Commonly found on barrens sites that are being reforested instead of managed for barrens.
- Sensitive to predation by feral cats.
- More research is needed to determine preference for native woody vegetation versus invasive exotics.

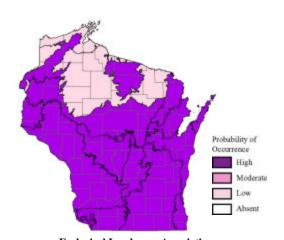
- Majority of population probably exists on farms and other private lands. Need to devise conservation
 actions and programs that promote grasslands, barrens, savanna, and shrubland restoration for the
 private landowner.
- Conduct research to determine the effects of feral cats and other meso-predators on reproductive success in agricultural and developing landscapes.
- Sound land use planning strategies are needed for this and many other open space-dependent birds.

Vesper Sparrow (*Pooecetes gramineus*)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	5
Global abundance:	2
Global distribution:	2
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.3
Area of importance:	4

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Oak barrens
Central Sand Plains	Pine barrens
Central Sand Plains	Sand prairie
Northeast Sands	Bracken grassland
Northeast Sands	Pine barrens
Northwest Sands	Pine barrens
Southeast Glacial Plains	Dry prairie
Southwest Savanna	Dry prairie
Western Coulee and Ridges	Dry prairie
Western Coulee and Ridges	Oak barrens
Western Coulee and Ridges	Sand prairie

- Succession of grassland and barrens habitats to shrubland and woodland (with a canopy cover of >30%) due to lack of fire or other management to supress woody growth is a threat.
- Loss of grassland habitat due to housing and commercial development is a serious threat.
- Intensification of agriculture, including early and frequent harvest of hay and conversion of short grassland to row crops or to tree plantations that are allowed to mature beyond approximately 10 years. Species will nest in row crops, but a majority of nests are destroyed due to modern field operations. Any habitat conversion that removes areas of exposed soil, which are a preferred feature for this species is a threat.
- This species does use shrubs and small trees for song perches; however, invasive woody plants can degrade quality of nesting grasslands, if woody canopy cover exceeds 30%.
- Aggressive invasive forbs, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.

- Agricultural pesticides may pose a threat in certain cases on winter, migration, and breeding grounds.
- Human disturbances on preferred habitat during the breeding season.

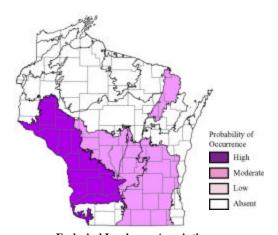
- Maintain large oak or pine barrens habitats.
- Continue agricultural set-aside programs, especially those that allow for permanent protection of preferred habitats.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Partnerships are key for conserving this species in working agricultural landscapes.

Lark Sparrow (Chondestes grammacus)

Species Assessment Scores*

State rarity:	4
State threats:	3
State population trend:	3
Global abundance:	2
Global distribution:	3
Global threats:	2
Global population trend:	5
Mean Risk Score:	3.1
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading
does not imply that the species is present throughout
the Landscape, but represents the probability that the

species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Oak barrens
Central Sand Hills	Sand prairie
Central Sand Plains	Oak barrens
Central Sand Plains	Pine barrens
Central Sand Plains	Sand prairie
Northeast Sands	Pine barrens
Southeast Glacial Plains	Cedar glade
Southeast Glacial Plains	Dry prairie
Western Coulee and Ridges	Cedar glade
Western Coulee and Ridges	Dry prairie
Western Coulee and Ridges	Oak barrens
Western Coulee and Ridges	Pine barrens
Western Coulee and Ridges	Sand prairie

- Succession of barrens habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth.
- Intensification of agriculture and conversion of short grassland to row crops or to tree plantations that are allowed to mature beyond 10 years.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.
- Lark Sparrows require relatively short grass with areas of exposed soil, such as barrens; activities that remove these features from the landscape pose a threat.
- Substantial invasion by woody plants can degrade the quality of nesting grasslands.

- Aggressive invasive forbs, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.
- Agricultural pesticides may pose a threat in certain cases on winter, migration, and breeding grounds.

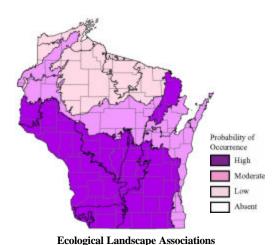
- Continue agricultural set-aside programs, especially those that allow for permanent protection of preferred habitats.
- Work with planning and zoning authorities to protect valuable open grassland/barrens landscapes from being converted to urban or suburban development.
- Partnerships are key for conserving this species in working agricultural landscapes.

Grasshopper Sparrow (Ammodramus savannarum)

Species Assessment Scores*

State rarity:	3
State threats:	3
State population trend:	5
Global abundance:	2
Global distribution:	2
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.3
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the

species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Sand prairie
Central Sand Plains	Surrogate grasslands
Southeast Glacial Plains	Dry prairie
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Dry prairie
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Sand prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Surrogate grasslands

- While this species tolerates some shrub cover, succession of grassland habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth, is a threat.
- Intensification of agriculture, including early and frequent harvest of hay or conversion of grassland (including pasture) to row crops or tree plantations.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.
- This species benefits from light to moderate grazing of grasslands, but overgrazing is a threat.
- Aggressive invasive species, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.
- Agricultural pesticides may pose a threat in certain cases on winter, migration, and breeding grounds.

- Continue agricultural set-aside programs, especially those that allow for permanent protection of grassland habitats. Prevent tree planting in important grassland areas receiving set-aside payments.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Create incentives for delaying hay harvest until after the primary breeding season
- Partnerships are key for conserving this species in working agricultural landscapes.
- Promote light to moderate grazing of grasslands on public and privately managed areas.

Henslow's Sparrow (Ammodramus henslowii)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	5
Global abundance:	4
Global distribution:	5
Global threats:	4
Global population trend:	5
Mean Risk Score:	4.4
Area of importance:	5

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Surrogate grasslands
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Mesic prairie
Western Prairie	Surrogate grasslands

- Succession of grassland habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth, is a threat.
- Any changes in climate that lead to loss or degredation of preferred habitat.
- Intensification of agriculture, including early and frequent harvest of hay and conversion of idle grassland to row crops or tree plantations.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.
- Henslow's Sparrows require relatively tall, grass-dominated dense vegetation with a significant litter layer and standing dead vegetation. Burning or haying entire fields should not occur more often than once in 3 years. Species prefers grass-dominated habitat, so any management that promotes dominance by forbs will pose a threat.
- This species does not tolerate grazing well.

- Invasive woody plants can degrade quality of nesting grasslands, if woody canopy cover exceeds 30%.
- Aggressive invasive species, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.
- Agricultural pesticides may pose a threat in certain cases on winter, migration, and breeding grounds.

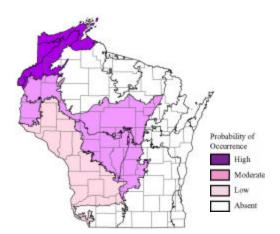
- Maintain idle grasslands on the landscape. Do not burn or mow habitat often.
- Do not graze grassland habitats used by Henslow's Sparrows.
- Continue agricultural set-aside programs, especially those that allow for permanent protection of preferred habitats.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Create incentives for delaying hay harvest until after the primary breeding season.
- Partnerships are key for conserving this species in working agricultural landscapes.

Le Conte's Sparrow (Ammodramus leconteii)

Species Assessment Scores*

State rarity:	4
State threats:	4
State population trend:	5
Global abundance:	3
Global distribution:	4
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.7
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Northern sedge meadow
Central Sand Plains	Surrogate grasslands
Northwest Lowlands	Northern sedge meadow
Northwest Lowlands	Open bog
Northwest Sands	Northern sedge meadow
Northwest Sands	Open bog
Northwest Sands	Surrogate grasslands
Superior Coastal Plain	Northern sedge meadow
Superior Coastal Plain	Open bog
Superior Coastal Plain	Shore fen
Western Prairie	Surrogate grasslands

- Succession of sedge meadows, wet meadows, and upland grasslands to shrublands or woods, due to lack of fire or other management to supress woody growth.
- Flooding of wet meadows.
- Intensification of agriculture, including early and frequent harvest of hay and conversion of grassland and former sedge or grass wetlands to row crops or tree plantations.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.
- This species does not tolerate grazing.
- Invasion by woody plants or aggressive herbaceous species, including cattails, yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.

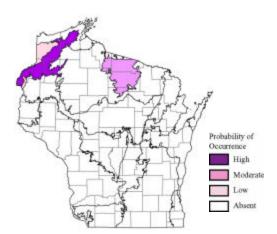
- Create incentives for delaying hay harvesting until after the breeding season.
- Do not enhance conifer succession in areas with Le Conte's Sparrow.

Nelson's Sharp-tailed Sparrow (Ammodramus nelsoni)

Species Assessment Scores*

State rarity:	5
State threats:	4
State population trend:	3
Global abundance:	3
Global distribution:	5
Global threats:	4
Global population trend:	2
Mean Risk Score:	3.7
Area of importance:	2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Northern Highland	Northern sedge meadow
Northwest Lowlands	Northern sedge meadow
Northwest Sands	Northern sedge meadow

Threats and Issues

- Succession of sedge meadows to shrub carr, due to lack of fire or other management to supress woody growth.
- Drainage or flooding (altered hydrology) of large northern sedge meadows preferred by this species. Conversion of drained sedge meadows to other land uses.
- Habitat fragmentation may also be an issue for this species.
- This species does not tolerate grazing.
- Invasion by woody plants or by reed canary grass, purple loosestrife, etc. can degrade habitat quality.

- Educate public on the value of large sedge meadows.
- Work to preserve and maintain condition of large expanses of northern sedge meadows.

Bobolink (Dolichonyx oryzivorus)

Species Assessment Scores*

State rarity:	3
State threats:	4
State population trend:	5
Global abundance:	2
Global distribution:	2
Global threats:	3
Global population trend:	4
Mean Risk Score:	3.3
Area of importance:	4

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Community
Wet-mesic prairie
Northern sedge meadow
Surrogate grasslands
Northern sedge meadow
Northern sedge meadow
Surrogate grasslands
Dry-mesic prairie
Mesic prairie
Surrogate grasslands
Wet-mesic prairie
Wet-mesic prairie
Dry-mesic prairie
Mesic prairie
Surrogate grasslands
Dry-mesic prairie
Surrogate grasslands
Mesic prairie
Surrogate grasslands

- Succession of grassland habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth.
- Intensification of agriculture, including early and frequent harvest of hay and conversion of idle grassland to row crops or tree plantations.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.

- Bobolinks benefit from light to moderate grazing, but overgrazing is a threat.
- Invasive woody plants can degrade the quality of nesting grasslands, if woody canopy cover exceeds 30%. Other invasive species, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.
- Agricultural pesticides may pose a threat in certain cases on winter, migration, and breeding grounds.

- Continue agricultural set-aside programs, especially those that allow for permanent protection of preferred habitats.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Create incentives for delaying hay harvest until after the primary breeding season. Bollinger *et al.* (1990) recommended that conservation lands be haved every 2-3 years, with cutting not to begin before mid-July. Hay should be removed to prevent thatch build-up. Will tolerate light, but not heavy, grazing, with grass heights of 8-12 inches. Burns should be conducted every 2-5 years, but do not burn all of one unit in one year (Jones and Vickery 1997).
- Partnerships are key for conserving this species in working agricultural landscapes.

Eastern Meadowlark (Sturnella magna)

Species Assessment Scores*

State rarity:	2
State threats:	4
State population trend:	5
Global abundance:	2
Global distribution:	1
Global threats:	3
Global population trend:	5
Mean Risk Score:	3.1
Area of importance:	4

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations
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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Surrogate grasslands
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Mesic prairie
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Mesic prairie
Western Prairie	Surrogate grasslands

- Succession of grassland habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth.
- Any changes in climate that lead to loss or degredation of preferred habitat.
- Intensification of agriculture, including early and frequent harvest of hay and conversion of idle grassland (including pasture) to row crops or tree plantations.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.
- Overgrazing decreases habitat quality for this species.
- Aggressive invasive species, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.
- Agricultural pesticides may pose a threat in certain cases on winter, migration, and breeding grounds.

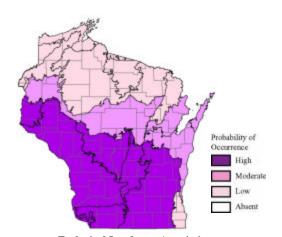
- Continue agricultural set-aside programs, especially those that allow for permanent protection of grassland habitats. Prevent tree planting in important grassland areas, particularly in areas receiving set-aside payments.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Create incentives for delaying hay harvest until after the primary breeding season.
- Partnerships are key for conserving this species in working agricultural landscapes.

Western Meadowlark (Sturnella neglecta)

Species Assessment Scores*

3
4
5
2
2
3
4
3.3
2

^{*} Please see the <u>Description of Vertebrate Species</u>
<u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations Please note that this is not a range map. Shading does not imply that the species is present through

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Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Surrogate grasslands
Central Sand Plains	Dry-mesic prairie
Central Sand Plains	Oak barrens
Central Sand Plains	Sand prairie
Central Sand Plains	Surrogate grasslands
Southeast Glacial Plains	Dry prairie
Southeast Glacial Plains	Dry-mesic prairie
Southeast Glacial Plains	Surrogate grasslands
Southwest Savanna	Dry prairie
Southwest Savanna	Dry-mesic prairie
Southwest Savanna	Surrogate grasslands
Western Coulee and Ridges	Dry prairie
Western Coulee and Ridges	Dry-mesic prairie
Western Coulee and Ridges	Oak barrens
Western Coulee and Ridges	Sand prairie
Western Coulee and Ridges	Surrogate grasslands
Western Prairie	Dry-mesic prairie
Western Prairie	Surrogate grasslands

- Succession of grassland habitats to shrubland and woodland, due to lack of fire or other management to supress woody growth is a threat.
- Intensification of agriculture, including early and frequent harvest of hay and conversion of idle grassland (including pasture) to row crops or tree plantations.
- Loss of grassland habitat due to development.
- Disturbance of grassland nesting cover during the breeding season.

- This species benefits from light to moderate grazing of grasslands, but overgrazing is a threat.
- Aggressive invasive forbs, including yellow parsnip, crown vetch, leafy spurge, thistles, reed canary grass, and some goldenrods can degrade habitat quality of grasslands for this species.
- Agricultural pesticides may pose a threat in certain cases on winter, migration, and breeding grounds.

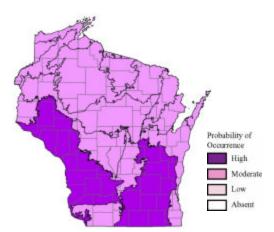
- Continue agricultural set-aside programs, especially those that allow for permanent protection of habitats. Prevent tree planting in important grassland areas.
- Work with planning and zoning authorities to protect valuable open grassland landscapes from being converted to urban or suburban development.
- Create incentives for delaying hay harvest until after the primary breeding season.
- Partnerships are key for conserving this species in working agricultural landscapes.
- Promote light to moderate grazing of grasslands on public and privately managed areas.

Rusty Blackbird (Euphagus carolinus)

Species Assessment Scores*

NA
3
5
3
2
2
5
3.3**
2

^{*} Please see the <u>Description of Vertebrate Species Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Floodplain forest
Southeast Glacial Plains	Bog relict
Southeast Glacial Plains	Calcareous fen
Southeast Glacial Plains	Emergent marsh
Southeast Glacial Plains	Floodplain forest
Southeast Glacial Plains	Shrub-carr
Southeast Glacial Plains	Southern hardwood swamp
Southeast Glacial Plains	Southern tamarack swamp (rich)
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Shrub-carr

Threats and Issues

- Rusty Blackbirds use wet agricultural fields, wetlands, and floodplain forests during migration. Loss
 or alteration of these wetlands could limit populations.
- Disease might be limiting the population.
- Clear threats are not known at this time and more research is needed.

- Maintain or enhance wooded wetland habitat.
- More research is needed to determine limiting factors.

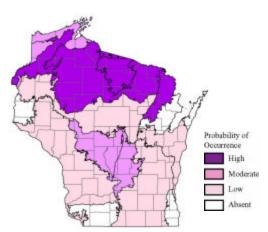
^{**} Based on fewer than the standard 7 criteria.

Red Crossbill (Loxia curvirostra)

Species Assessment Scores*

State rarity:	NA
State threats:	3
State population trend:	3
Global abundance:	2
Global distribution:	1
Global threats:	3
Global population trend:	3
Mean Risk Score:	2.5**
Area of importance:	3

^{*} Please see the <u>Description of Vertebrate Species</u> <u>Summaries (Section 3.1.1)</u> for definitions of criteria and scores.



Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape -community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Plains	Northern dry forest
Central Sand Plains	Northern dry -mesic forest
Central Sand Plains	Pine barrens
North Central Forest	Northern dry forest
North Central Forest	Northern dry -mesic forest
North Central Forest	Northern mesic forest
North Central Forest	Northern wet forest
Northeast Sands	Northern dry forest
Northeast Sands	Northern dry -mesic forest
Northeast Sands	Pine barrens
Northern Highland	Northern dry forest
Northern Highland	Northern dry -mesic forest
Northern Highland	Northern wet forest
Northwest Lowlands	Northern dry -mesic forest
Northwest Sands	Northern dry forest
Northwest Sands	Northern dry -mesic forest
Northwest Sands	Northern wet forest
Northwest Sands	Pine barrens
Superior Coastal Plain	Northern dry forest
Superior Coastal Plain	Northern dry -mesic forest

- Age and dispersal of pine and spruce are the primary concerns.
- Since Wisconsin is at the southern limit of red pine and white spruce, Red Crossbill range shifts northward are a concern.
- Plantation management of red pines is preventing full cone potential. Management is needed on a shifting mosaic across the range. Age class diversity is needed for pines and spruce forests.

^{**} Based on fewer than the standard 7 criteria.

- Cone gathering is a minor threat.
- New diseases of red pine are a major concern.
- The genetics of Red Crossbills suggest several distinct species or at least quasi species. Their conservation needs may increase based upon the results of future genetics research.

- Promote conservation of conifer dominated systems with a full range of age classes.
- Improve natural regeneration methods and use of fire in pine management.
- Develop conifer markets.
- Conduct research on Red Crossbill food profitability based on conifer seed energy content and ripening phenology.
- Conduct research on Red Crossbill genetics.